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RAIL-ROAD NEWS.

Illinois Central Railroad.

The Washington correspondent of the Baltimore Sun, under date of the 16th ult. says:—

The Attorney General, Mr. Crittenden, decided, on Saturday morning, upon the construction of the bill granting alternate sections of land to the Central Illinois Railroad. The Central Illinois Railroad Company are to have alternate sections of six miles on a line, they may draw from Chicago to Cairo, and if part of the land so located should already be settled or entered, then they are to have the privilege of selecting an equal amount anywhere within fifteen miles of the said line.

The iron for one hundred and twenty miles of the road is already purchased and imported, and so much of the road will be completed this year. Advertisements for proposals will be immediately issued; Chicago south, 120 miles; from Freeport to Dubuque; from La Salle, south 60 miles, and from Cairo, north. The road, when completed, will be the longest continuous road in the world, nearly double the length of that of St. Petersburgh to Moscow, in Russia.

Muscogee Railroad---The Ladies.

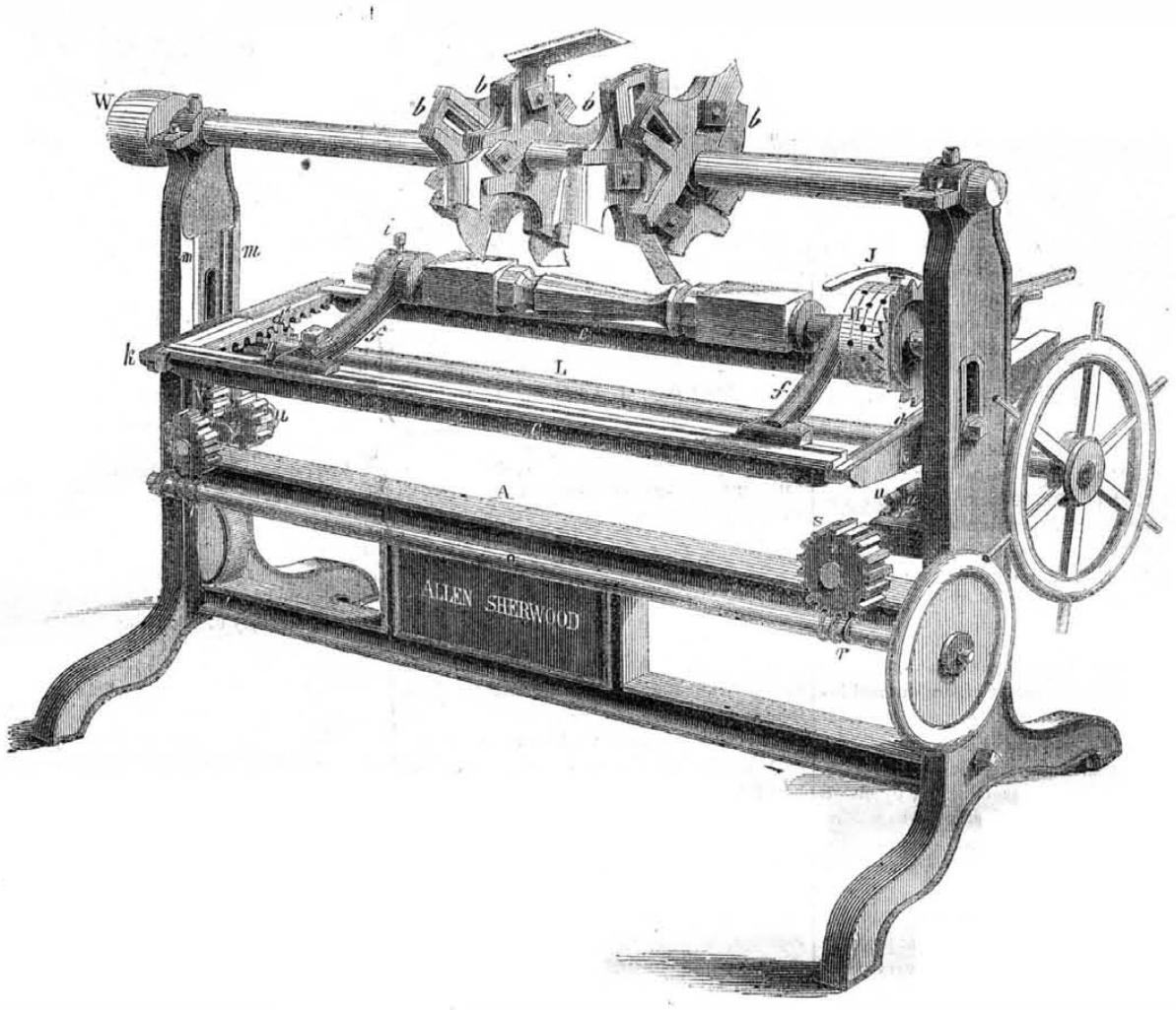
On the Muscogee Railroad—that part which has been finished—there are one passenger and one freight engine; one passenger, one baggage, and six platform cars. The passenger car was the gift of tho ladies of Columbus. The place which enjoys the benefit of such mothers, wives, and sweethearts as Columbus, Ga., women so devoted to progress and improvement, cannot fail to stand high in intelligence and true worth. In many instances we have heard of ladies presenting banners, &c., but this is the only case with which we are acquainted where the ladies have so sensibly exhibited their feelings in respect to railroad improvements, by presenting a splendid passenger car to the company.

Defrauding Railroads.

A very important verdict was rendered re cently in Jefferson county, N. Y. The defendant was on board the cars ot the Hudson River Railroad Company during a serious collision, and professed to be very badly hurt by it; on the strength of which claim, the company allowed and paid him $250 damages. Learning afterward that his pretence of injury was grossly exaggerated, if not wholly fraudulent, they traced him out and sued him, and have just recovered a verdict for the amount paid him, with costs. In their action in the premises, the company have subserved the cause of justice, and deserved especially well of all railroads.

A railway bridge is about to be thrown over the Vistula. It is to be 2,500 feet long and 63 feet wide, to rest on six piers, with a span of 500 feet between each. The lines will run along the sides of the bridge, leaving a road between them for carts, &c.

SHERWOOD'S PRISMATIC TURNING LATHE.---Fig. 1.



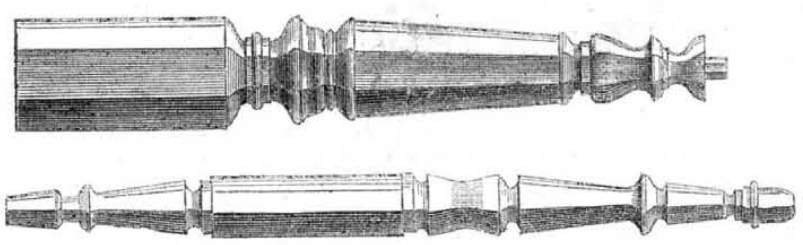
This lathe is for producing either irregular or symmetrical polygonic forms, and is peculiarly adapted to making bed-posts, newel posts, banisters, piano legs, and such articles. It is the invention of Allen Sherwood and Avery Babbit, and was secured to them by letters patent granted Jan. 13, 1852.

Figure 1, of the accompanying engravings, is a perspective view of the lathe; and figure 2 represents some specimens of work performed by it, which will give the reader an idea of its usefulness and of the variety of articles to the manufacture of which it is applicable.

The lathe consists in a carriage which resembles the bed and heads of an ordinary lathe, and a revolving cutter shaft carrying a series of cutters, which are of such form that the edge of each in rotating will describe a figure, the outline of which, in a plane passing through its axis, is the counterpart of a corresponding line on the side of the required prism, so that the several figures generated by the cutters joined together will leave an outline in a plane taken through their axis the exact counterpart ot one of the sides of the prism they are intended to produce. The carriage in which the block to be cut is placed holds it with its axis parallel to the axis of the cutter shaft, and admits of its being turned so as to present any of its sides to the action of the cutters, and also allows it to be moved in any direction transversely to the axis of the cutters.

A (Fig. 1) is the frame which carries all the working parts, consisting ot two upright standards, each surmounted by a pillow block which forms one of the bearings of the cutter shaft. The latter carries a series of heads, *b*, having radial grooves in them in which the

Figure 2.



cutters are secured; the cutters will be of various forms according to the pattern to be produced. The feed carriage consists mainly of a frame, *c c*, *d d'*, which may be likened to the bed of a common lathe, carrying two heads, *f f'*, which are essentially the same as the heads of a common lathe, the head, *f*, carrying a mandrel, G, which turns in a suitable bearing, and carries a chuck or other contrivance for holding and turning the block, and the head, *f'*, carrying an adjustable mandrel similar to the back centre of a lathe. The centres of the two heads are in line parallel with the axis of the cutter shaft. The mandrel, G, carries a cylinder, H, whose periphery is graduated into any required number of divisions, and a spring catch, J, is secured to the carriage to engage in the divisions of the cylinder and prevent it from turning.

The carriage rests upon parallel ways, K K, transverse to the axis of the cutter shaft. These ways are arranged to slide towards and from the cutting cylinder in tracks, *m m*, in the standards of the frame. This motion is given by turing a spindle, O, which carries two endless screws, *r r*, which gear into worm wheels, S S, upon two short spindles, *t t*, which are fitted in bearings on the frame parallel with the ways. These spindles carry toothed pinions, *u u*, which gear into racks, V, attached to the ways and perpendicular to them. The carriage is moved upon the ways transversely to the axis of the cutters by turning a shaft, L, which carries pinions, *n n*, gearing into toothed racks attached to the transverse bars, *d d*.

The operation is as follows:—The cutter shaft is furnished with a set of knives, which, in revolving, combine to describe a figure whose longitudinal profile is the counterpart of the longitudinal profile of the figure to be produced. The carriage is moved to one side ot the machine by turning the shaft, L, and the block to be cut is placed between the centres; it is then brought to a suitable height or distance from the axis of the cutter shaft, O. The spring catch, J, is engaged in one notch in a circle of divisions on the cylinder, H, corresponding in number to the number of sides required to be given to the object, and a rapid rotary motion is given to the cutter shaft through a band which runs over the pulley, W. The operator then turns the shaft, L, in the proper direction to make the carriage and block pass transversely beneath the revolving cutter which cut away the block and leave a face whose transverse section at any point is parallel with the ways upon which the carriage travels, and whose longitudinal section or profile is the counterpart of that of the figure described by the revolution of the cutters. The carriage is now run back and the spring catch disengaged, the mandrel, G, is turned to bring the next notch to the catch, which is then re-engaged, and the carriage run again under the revolving cutters. The above operations are repeated until the required number of sides are given to the object.

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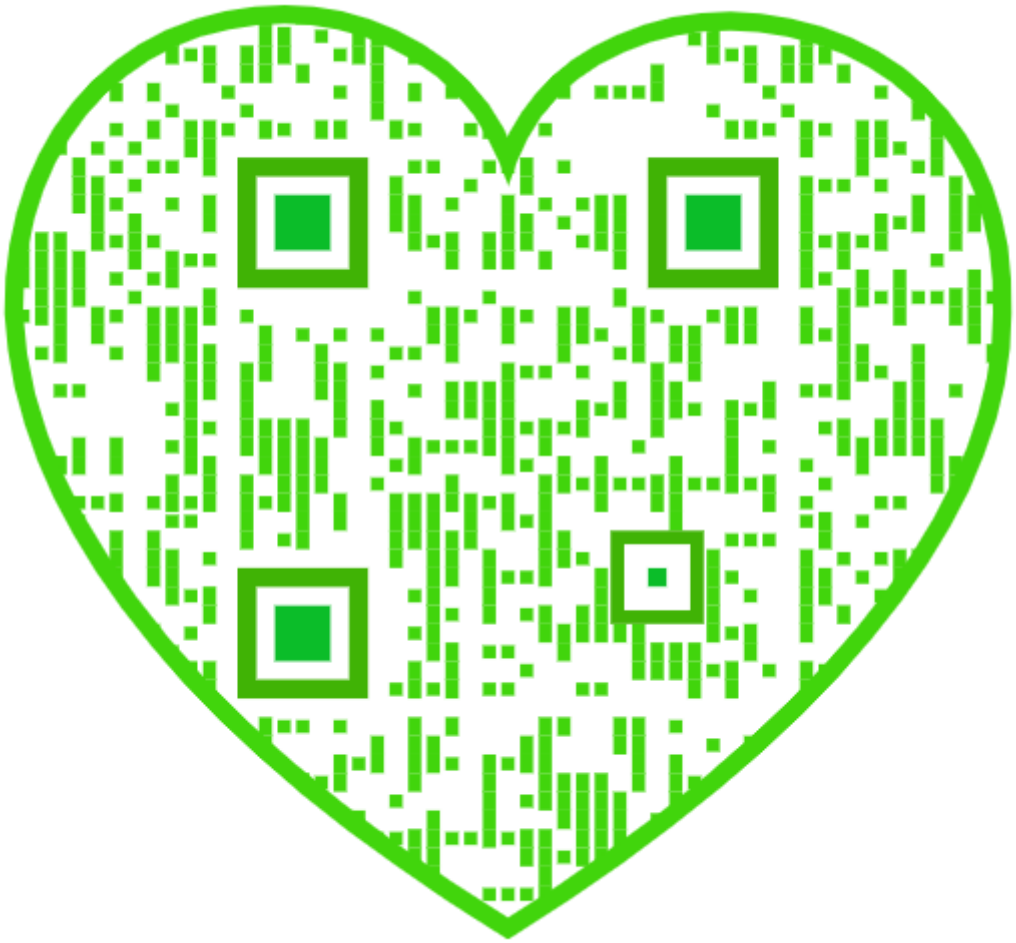

The transverse movements of the carriage as described in a straight line, make all the faces of the object straight transversely, but concave faces may be produced by raising the carriage when the centres are exactly beneath the axis of the cutter shaft.

This lathe is said to perform as much work as a common turning lathe, while the work produced is of a much higher class, the variety of work it may be made to do is almost infinite. It does not require a practical turner to use it, but any good mechanic, or indeed any person capable of understanding its operation, may use it. Any information about the sale of rights, &c., may be obtained by addressing Allen Sherwood, Auburn, N. Y.

MISCELLANEOUS.

The Oil Market.

The New Bedford Whalemen's Shipping List gives a statement somewhat in detail, to account for the recent rapid advance in the oil market, extending to all branches of the oil trade. The rise is caused, it says, by the greatly diminished import of whale and sperm oil this year, viz., 155,000 barrels against 428,000 in 1851, and 372,000, the average of ten years past; and the amount of consumption and export, which, for the average of seven years, is stated at 276,000 barrels consumed, and 104,000 exported, making a total annual demand of 480,000 barrels. This statement shows that the exports of the present year do not come up to half the demand. In addition to this is the diminished supply of lard oil, from the falling off of the *hog crop* of both the last and present years.

Wooden Nutmegs Outdone.

The Paris correspondent of the National Intelligencer gives us some laughable information:—It appears that the French have learned to make counterfeit coffee berries of worthless flour. The paste or dough is, by means of moulds skillfully prepared, made to assume the shape of grains of coffee, whether of Mocha, or Bourbon, or Martinique, to suit the taste of buyers. The artificial grain is then baked until it takes the color of parched coffee and is retailed as such, with great profit, in the grocery stores. The practice, very general in France, of buying from the grocers coffee ready parched, facilitates this mode of falsification, otherwise impossible.

Rise of Labor.

The leading article in the January number of Blackwood's Magazine, is by the celebrated historian, Alison. In it he predicts the happiest results as likely to follow the recent gold discoveries—both in California and Australia. He says the consequences of an annual supply of $1000,000,000 will be incalculable in increasing the happiness of mankind. The changes will come gradually, he thinks, but come they will, as sure as any change produced by fixed laws.

The Wheeling Bridge.

It is stated that during the recent great rise in the Ohio river, the tallest boat on it, called the Cincinnati, passed under the wheeling bridge, and had eleven feet of space to spare. This fact shows that the noble structure is not an obstruction to navigation.—[Exchange.

[This is true, but it is also stated, "*she threw back her chimneys.*" We are indebted to W. J. McAlpine, Chief Engineer of this State, for his report on the Wheeling Bridge, but which we have not yet had time to examine for the benefit of our readers. We hope to be able to do so in the course of a week or two.

Breaking of Railway Axles.

We have seen in a number of our daily papers, various propositions, by correspondents, for providing against the breaking of railway axles. It would be well for men to consider well their subjects before writing on them. One proposes to have separate axles for each wheel; another to have one wheel loose on an axle, and all to prevent torsion in turning curves. These men do not know that the tread of railroad car wheels is conical to suit the curves on the track, and they do not see that to have the wheels on separate axles would increase the danger of running off the track in the one case; and the loose wheel in the other case would effectually provide against a forward *motion*.

Recent Foreign Inventions.

Glass, China, Porcelain, &c.—W. Hodge, of St. Austell, Cornwall, Eng., has taken out a patent for improvements in the manufacture of glass, china, porcelain, earthenware, and artificial stone; the improvements consist in the above-stated manufactures of the material known as hornstone porphyry, otherwise called elvan or freestone, which has never hitherto been used for the purpose.

For the manufacture of glass, the elvan is to be reduced to powder, and to be mixed with the other pulverized materials in the melting-pot; and as the constituents of elvan are silex in combination with potash and alum in different proportions, it will be found a material well adapted for glass making. The proportion of elvan employed will vary according to the quality of glass to be produced, and the nature of the material will determine the quantity of fluor spar, lead, potash or other flux, for fusing the same. Thus, when the proportion of silex is large, an increased quantity of fluor spar will be required, and so with other fluxes. The elvan does not generally for this use require to be washed after being pulverized, but it may sometimes be found necessay to submit it to this operation.

For the manufacture of china, porcelain, and earthenware, the elvan is reduced to powder, and brought to a plastic state, when it is moulded in the usual way, and then dried and fired as customary. The elvan may be used alone, or may be combined with china clay, or such other materials as are commonly used in earthenware or china manufacturing; and according to the quantity in which it is used, so will the character of the manufactured article more or less resemble that of stone-ware. The elvan may also be used for making glazes in the same manner as other materials are now employed for the same purpose.

For producing artificial stone, the elvan may be used alone or in combination with granite or other similar stone or substance in broken fragments, or reduced to a powdery condition. The materials having been mixed together, are brought to a plastic condition, moulded into blocks, dried and fired in the usual way.

Although in the manufacture of articles in china, porcelain, and earthenware, the elvan is above directed to be powdered and brought to a plastic condition, and moulded into the form of article to be produced, it is nevertheless capable of being worked in a pulverized or disintegrated condition, and applied to the manufacture of articles by dies and pressure, the method of doing which is well understood.

Improvement in Smoking Pipes.—George Phillips, of London, has recently taken out a patent for improvements in smoking pipes.

It is well known that tobacco contains two highly poisonous constituents, nicotine, and nicotianine, which are distilled over with the volatile oil during the act of smoking, and when introduced into the system tend much to the injury of the health and comfort of the smoker. The former of these products is volatilized at 320°, and the latter at 212° Fahrenheit. Now the object of the patentee is to intercept, cool down, and condense these noxious oils; and this he effects by causing the smoke to traverse worms, or plates of metal, or surfaces of wool cotton, or other fibrous material, or discs of woven fabrics, or sawdust, pumice, or other porous material, which will permit the passage of the smoke, but intercept and condense the volatile oils; and he prefers for this purpose to use the material known as "wool in grease." He also saturates the fibrous or other material employed with fats or fixed oils, which he finds to act effectually in condensing the noxious products in tobacco smoking. The same effect may be produced by using alkaline solutions, but the patentee does not recommend their adoption, as they are found to destroy the true taste of the smoke. The fibrous materials, lightly packed, are placed in a stem of glass, in which they are retained by perforated corks, and they are introduced into the stem at about the middle of its length, so as to allow room for the mouth-piece and bowl to be attached.

The bowl is formed with a stem, which is introduced into the glass tube, and the space left between the interior of the tube and the stem of the bowl constitutes a reservoir, which serves to contain the condensed oil, &c., and prevents their return into the bowl; and sometimes the stem of the bowl has a cup attached to its end, to prevent the oil passing into it. The mouth piece is fitted in a similar manner—that is, it has a stem which projects into the tube so as to prevent any condensed oil from passing into the mouth of the smoker. The improvements are also shown as adapted to meerschaums, and the tubes may be fitted so as to admit of holding cigars. the patentee also in some cases introduces a wet sponge in the tube at the top, for the purpose of obtaining a water pipe.

To Render Water Wholesome.

The alkaline waters found on the plains, and so often found fatal to man and beast making their journey overland to California and Oregon, are said to be rendered entirely palatable and wholesome by mixing a small quantity of citric or tartaric acid, which neutralizes the alkali.—[Ex.

[Those who use the water will then have what is termed good soda water.—The best way to purify the water would be to use sulphuric or chloric acid, and allow the sediment to settle, then filter through sand or charcoal. The above plan in the extract is the most convenient, and travellers intending to take the overland route to the Pacific, would do well to take some tartaric acid along with them, it can be purchased at any druggists; it is sold in beautiful crystals which should be kept well covered, as they have the quality of absorbing moisture from the atmosphere.

A Crystal Palace in France.

Among the last decrees of Louis Napoleon before surrendering the nominal dictatorship, was the following:—

"An edifice destined to receive the national exhibitions, and which may serve for public ceremonies and for civil and military fetes, shall be constructed on the system of the Crystal Palace in London and established in the Great Square in the Champs Elysees."

The London Crystal Palace received 50,000 persons on the last Saturday in March, and 20,000 were present at one time. Great efforts are making to preserve this edifice.

One piece of carpet for the Crystal Palace in New York (that is to be when the funds are raised), has arrived from England. It had to pay the duty; this kind of duty will prove exceedingly effective in preventing contributions from abroad. If it were a "National Exhibition" the duty would be relaxed as was the case with the articles sent to the World's Fair.

Stereoscopic Daguerreotype.

We have just had an opportunity of inspecting these worderful productions of art at the establishments of Messrs Voigtlander and Evans, at Knightsbridge. The ordinary daguerreotype presents, as is well known, a mere flat miniature of the person represented. It is a common perspective pencilling, effected by the sun's rays, and no more. In the beautiful invention to which we now direct the attention of our readers two distinct copies of the same image are simultaneously taken in two adjacent cameras. Though these are apparently similar, they are yet, in fact, somewhat different in their representation of the object, corresponding as nearly as possible, to the slight difference of picture produced in Nature upon the right and left eyes of an observer, in viewing any solid figure. The two daguerreotypes so taken are placed in a peculiarly constructed box, termed a stereoscope, which admits a view of one picture to the right eye only, and of the other to the left. The consequnce is that the two images are so completely blended by the operation of the brain, that the sense of sight no longer recognizes a flat picture, but a solid reality (in miniature it is true), but otherwise endowed with all the appearance of life, excepting that of motion. We strongly recommend the curious in optical illusions to take an early opportunity of seeing this remarkable application of the principle of binocular vision at the establishment above referred to. London Mining Journal.

[There was some talk a few weeks ago that this instrument had been introduced into this city, and was used by some New York artists, but we have neither seen nor heard anything *positive* in fulfillment of the truth of the rumor.

Strains upon the Diagonals of Lattice Beams.

The London Journal of Arts and Sciences gives an account of experiments recently made in London upon lattice beams.

The experiments were made on a model 12 feet in length, so constructed that the diagonals in compression (which were strips of mahogony, let into the top and bottom, but not fastened to them, and the ties which were of hoop iron chains), must of necessity take their respective bearing and strain; and by the substitution of a dynamometer for any one of the ties, the strain on it could be accurately measured.

The results of the investigation were, that for a parallel beam of one span, supported at each end and loaded at the centre, the strains throughout the diagonals were uniform, and the horizontal strains were greatest at the centre, decreasing uniformly at the points of support. For a similar beam, uniformly loaded over its entire length, the strains at the diagonals commenced at the centre, increasing uniformly to the points of support; while the horizontal strains decreased from the centre to the ends in the ratio of the ordinates of a parabola. These results were arrived at by different methods of reasoning, and the formulæ derived from them were stated to be applicable to the more complex form of a closely intersected lattice, taking into consideration the increased number of triangulations.

Pig Iron without the Blast.

C. S. Quilliard, of Rondout, Ulster Co., N. Y., writes us that he can make pig iron by a peculiarly constructed furnace, without using blast at all, thus saving an enormous expense in the manufacture of iron. He has been brought up to make iron, as was his father before him, and he is well acquainted with all the different plans of smelting iron.

The New Arctic Expedition.

The vessels of Capt. Sir E. Belcher's Arctic expedition, are provided with harpoon guns to kill whales and other large fish, and Minie rifles to bring down bird and deer. The oil of the fish will serve to give the expeditionists light and heat.

The Supposed Relic of the Steamer President.

The Boston Traveller of the 1st instant, speaks of the rumor brought to that port from Barbadoes, of the discovery of a figure-head, which is conjectured to be a portion of the ill-fated steamer President:

"The Grenada Chronicle has a statement that on the 4th ult., a ship's figure-head of unusual dimensions was cast ashore on the windward part of the Island. It had originally been fully eight feet high, and is that of a Senator in the act of speaking; he is partially bald, and holds a scroll in his right hand, the left grasping a scarf, which is thrown over him. It is cut of white pine and gilt, and the papers conjecture that it may be a remnant of the steamer President, though what grounds they have for such a supposition we do not learn."

Emery in Arkansas.

A mountain of emery, or corondum, is reported to have been discovered in the southern part of Arkansas near a mountain of iron. It is represented as being equal, if not superior to the Russian material. In the Arkansas emery, as in that of Russia, rubies are found.

We notice that a correspondent of the Indiana State Sentinel recommends Col. J. Fraklin Reigart, of Lancaster, Pa., as a suitable person for the office of Commissioner of Patents, to succeed Mr. Ewbank, in case of any change in the administration of the office.

We think Mr. Reigart would prove a good officer, as he has practical knowledge of the details required to discharge the duty.

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Life Boats---Loss of the Birkenhead.

MESSRS. EDITORS—We have another proof, among many of the impossibility of saving, by boats, more than a limited number of persons. Here, in calm weather, a stout steamship of war runs on a rock, and not one-third of the people on board are saved! The boats being, as usual, almost useless. The same story has been told a thousand times, and will be told again and again, before means are adopted or inventions are enforced upon the attention of those interested. The ship itself, whatever her size and tonnage—whatever the amount of her cargo—must be made a life-ship: there is no other way. It is absurd to trifle with life in the way we do, to save some trivial expense, or to avoid some pretended inconvenience or want of room for improvement.

I never went on board a vessel, whether on the broad Atlantic, or on a river, without a conviction of the almost useless nature of boats in case of accidents, and a feeling of contempt for the reason of men, who allow their common sense to be mystified by such a fallacious appearance of security. A moment's thought, not to speak of every day experience of the inefficiency of such means, ought to satisfy any one of the humbug—for such it is. Let the public, now becoming such an immense traveller, be fully alive to the truth, and some chance of a remedy may be applied.

Safety-ships have been constructed in England, divided into water-tight compartments. A variety of other plans have been suggested at different times, some of which are very good. Would it not be sufficient to place under the decks, and between the beams, tubes or compartments of india rubber or gutta percha, connected with numerous pumps on deck, which might be inflated at a moment of danger so as to support the ship with ease? These tubes or compartments can be made to lie close against the ceilings, and be kept there by pieces of wood pressed by a spring, which would give by pressure from within. The whole contrivance is simple, in no way inconvenient, might be ornamental, and but of little expense. How much more consoling to run to the pumps to inflate these tubes (one half of which ought to be made sufficient to support the whole vessel) than to set to work in anxiety and doubt, amounting to despair, to keep the water out of a leaking sinking ship. Let all your boats be safety-boats for the limited services they can render at sea—but, in common sense, let your ships be safety-ships in case of accident. A hundred pumps for the purpose in question might be placed around a ship, were it necessary, and form a part of the bulwarks; with what alacrity would every man work at them! With what greater confidence would not the public trust itself in the magnificent but now treacherous palaces which float in the Old and the New World?

I will merely add that no vessel should put to sea without first ascertaining the working condition of her safety-power. C. L. A.

Washington, D. C.

[The Birkenhead was an iron steamer, and, like the Orion, which was wrecked two years ago on the coast of Scotland, it was, we believe, divided into water-tight compartments. While it is just, proper, and prudent to make every ship, as far as possible, a life-ship, it is also prudent to have a sufficient supply of good life-boats, ready at the moment of disaster to be easily launched, and sufficient in number to carry all on board. There is not a single ship that navigates the ocean (always excepting whalers) which has its boats in proper condition to be used in cases of great and sudden danger.—[ED.

Cure for Rheumatism.

A Parisian correspondent of an English paper says:—

"I picked up the other day, from one of the most eminent and intelligent physicians in France, the favorite pupil of Dupuytren, some curious scraps of medical lore, that perhaps might amuse you; and coming from a man whose liberality of opinion is one equalled by his own skill and intellect, they are certainly worthy of perusal, and might afford valuable hints to science. A lady who had formerly been a patient of his, but whom, in consequence of her removal from Paris, he had not seen for some time, came to him lately to say that her daughter was afflicted with violent rheumatic pains. As she still resided in the country, however, Dr. C. could not do more than give her some general counsel, deferring the actual treatment till she could bring her daughter to Paris. In a few days she returned, telling him that her sufferings were completely removed, in the following singular manner:"—"One night being seized with an attack, the violence of which was intolerable, the mother, in despair, sent to the only medical practioner of which the village boasted—a man who, by the help of a little self-taught lore, and a certain knowledge of simples and old woman's remedies, treated the peasants satisfactorily enough.

No sooner did our Galen arrive, than he directed that all the empty bottles that could be collected should be placed on the floor, the mattresses laid over them, and the sufferer extended thereon. The effect was magical. In a few minutes the patient experienced the greatest relief, and finally a complete cessation of suffering; and though the attacks had afterwards returned, they never failed to yield to this singular remedy. The solution of the mystery, (of which the village doctor was quite ignorant), Dr. C. found at once. Electricity, it appears, is the great aggravator of all such maladies; and of this force, glass is a non-conductor. If, then, the electric current is cut off from contact with the patient, immediate relief is the consequence. Profiting by the hint, Dr. C. has since caused thick glasss cylinders to be under the feet of the malade's bed, and with success the most complete.

Another case was a cure where consumption had actually commenced, and had made some progress by passing some five or six hours a day in a butcher's shop. A third, where what was considered a fatal affection of the spinal marrow in a young girl, completely yielded to the process of sun burning—the patient being stripped to the waist and placed facing a south wall during the hottest part of the day.

[We have noticed the above in at least thirty papers. We publish it entire, so that our readers may understand it fully. It is like a great deal of the nostrum nonsense which is so plenty at the present day, and which appears to be gulphed down with a universal faith by so many who seem to prefer quackery to anything else. This affair about the bottles is the old revived stuff of beds with crystal legs, the bottle part of the cure is new, consequently rheumatism will soon cease, all that will have to be done, according to the foregoing, by those afflicted, to effect a cure, is simply to wear thick glass soles in their shoes, sit upon crystal legged chairs, and sleep on mattresses laid upon bottles.

The cases mentioned about consumptive people is the greatest piece of nonsense we have read in many a day, the sun burning operation is as brutal as that of a doctor we heard of who fired a train of powder along the back of his patient to cure the spine disease.

Manufacture of Beet-Root Sugar.

Dr. Scoffern thus describes the beautiful system of mechanical sugar making appliances now followed by M. Van Goethem, at Lembecq, near Brussels, in Belgium:—

The preliminary operation of cleaning the roots, grating them, and expressing the juice, need not be detailed. This juice is loaded with albuminous and other impurities to such an extent that if they be not separated within a few hours at farthest, fermentation will rapidly set in, and the contained sugar be destroyed.

M. Van Goethem employs lime for this separation; he uses sugar of lead in the laboratory, and acknowledges it to be the better agent; but he fears to employ it in the large scale. Being defecated, the juice undergoes a series of mechanical treatments; first it is forced by means of a monte-jus up to the summit of a copper chimney, not made of one wall of copper, but described as a flat copper chamber rolled into a cylindrical or slightly curved form. Into the chamber itself steam is admitted; the chimney thus having two hot or evaporative surfaces, one on the inside and a second on the outside.

The beet-root juice, being conducted to the summit of this chimney, is then spilt into two divisions; one being caused to trickle down in contact with the inner evaporative surface, the other on the outer; and thus when the juice has arrived at the lower extremity of the chimney, it is found to have acquired a density of 28° Beaume, and is in a fit state to be passed through animal charcoal.

After having been exposed to this charcoal filteration, it is passed down over a similar copper chimney a second time; and this is all the evaporation to which the juice is exposed.

Properly speaking, the juice cannot be said to have been boiled; and, at the period of the termination of the final evaporation, not a crystal has formed. The concentrated juice is now put aside in shallow wooden tanks, lined with zinc, and abandoned to spontaneous crystallization. As soon as a crop of crystals is formed, they are removed by a kind of net, and exposed to the agency of centrifugal drainage.

Returning now to the wet crystals of sugar which have been taken out of the crystallizing tank—they are put into one of these rotary engines, or turbines; and the machine is made to revolve with the velocity of 1,000 times per minute, the result of which is that a large portion of the uncrystallized matter is driven off. The crystals, now dry, but still dark colored, and very small, are put into another tank, surrounded with a fresh quantity of concentrated juice, and allowed to remain at rest until they have grown to the size desired. They are then taken out and rotated again with the same result as before. The principle is the entire abandonment of every crystallizing means save the agency of spontaneous evaporation. There are some scores of these tanks, in which the original juice as well as the molasses, separated by rotary agency, are abandoned to spontaneous crystallization.

The result of this treatment is the production of sugar so pure that mere rotation will separate nothing further.

Use is now made of a concentrated solution of pure sugar and water, which, being poured into the centre of the turbine during the period of rotation, rushes through the crystals and washes them white.

The last stage consists in converting the disintegrated grains into loaves; which is accomplished in the following manner:—The sugar, being mixed with a certain portion of concentrated solution of pure sugar in water, is heated for some time at a temperature of 173° Fah., and then poured into moulds.

Loaves thus prepared, are, like all sugar loaves at a similar stage of manufacture mixed with a considerable amount of uncrystallized matter; which in sugar-houses, as ordinarily conducted, is allowed to leak away, and finally the loaf is washed absolutely white by pouring upon its face a certain amount of pure and saturated sugar solution. This treatment, however, occupies by the ordinary method a week at least; whereas M. Van Goethem, by having recourse again to rotation accomplishes the desired end in about twenty minutes.

This rotative loaf-machine consists of a horizontal wheel of iron, shaped like a steamer paddle-wheel, and fitted with peripheral rings, into each of which fits a sugar-loaf. There are fifty-one rings in all, arranged in three rows; so it follows that fifty one sugar-loaves are exposed to rotative agency at the same time.

The machine is made to revolve at a velocity of about 1,000 per minute, and with the result of showering forth all the wet impurities existing in the sugar-loaf through small apertures in the apices of the moulds.

This pouring of a concentrated solution of sugar and water upon the basis of the loaves is effected by means of a large metal tube tending vertically down into the central orifice of the rotating wheel, and bending, when arrived opposite the faces of the first row of loaves, abruptly toward them at a right angle. Thus it follows that the amount of liquor being proportioned to the capacity of the space left on the base of each mould, not a drop is lost; that portion which overflows the first row of loaves, after they can hold no more, passing on to the second row: and the overflow from this passing in its turn to the third from which there is no overflow except the fluid has been added in excess.

A few minutes' rotation suffices to drive thoroughly the loose part of the liquor through the sugar-loaves. The machine is then stopped, and the sugar-loaves taken out sufficiently dry for being stored.

This large rotary machine is, as might have been *a priori* imagined, rather dangerous Some time since, at Valenciennes, one of these engines, yielding to the force of centrifugal power, burst into pieces, which, flying about, killed no less than eight men.

Harmony of Color in Dress.

A lady correspondent of the London Art Journal, in treating upon the subject of dress, says that "the optical effect of dark and black dresses is to make the figure appear smaller, hence it is a suitable color for stout persons; black shoes diminish the apparent size of the feet. On the contrary white and light-colored dresses make persons appear larger. Large patterns make the figure look shorter, longitudinal strips, if not too wide, add to the height of the figure, horizontal stripes have a contrary effect, and are very ungraceful. Incongruity may be frequently observed in the adoption of colors without reference to their accordance with the complexion of the wearer, as a light blue bonnet and flowers surrounding a sallow countenance, or a pink opposed to glowing red; a pale complexion associated with a canary or lemon-yellow, or one of delicate red and white rendered almost colorless by the vicinity of a deep red. If the lady with the sallow complexion had worn a transparent white bonnet; or if the lady with the glowing red complexion had lowered it by means of a bonnet of deeper red color; if the pale lady had improved the cadaverous hue of her countenance by surrounding it with pale green, which, by contrast, would have suffused it with a delicate pink hue; or had the face of delicate red and white been arrayed in a light blue, or light green, or in a transparent white bonnet, with blue or pink flowers on the inside—how different and how much more agreeable would have been the impression of the spectator! In general the broken and semi-neutral colors are productive of an excellent effect in dress. They may be enlivened by a little positive color, but the contrasting color should bear but a small proportion to the mass of principal color. A blue bonnet and dress may be contrasted with an orange colored shawl, but the blue to contrast the orange must be of a very deep tone; a pink bonnet may be worn with a green dress, but the hue of each should be carefully assorted according their exact contrast. Colored shawls are instances in which a great variety of colors may be arranged with harmonious and rich effect. It is always necessary that if one part of the dress be highly ornamented or consist of various colors, a portion should be plain, to give repose to the eye. The French manufacturers pay great attention to this subject, and the good effects of this study are visible in the textile fabrics which are so highly valued. American manufacturers, by the same attention, may reach the same degree of perfection.

Fire Without Coal.

Recent arrivals from Europe bring gratifying results of some curious experiments, which have been made at the London Polytechnic Institution, to test the result of the recent invention of Dr. Bachoffner, which consists in the substitution of thin pieces of metal in the place of coals in fire grates, which being acted upon by a small jet of gas immediately become red hot, and emit a prodigious degree of heat. The flame which is produced by the gas co-operating with the metallic luminæ, gives the appearance of a brisk and cheerful coal fire, &c.

[The above we have seen within three weeks copied into almost all the daily papers as something but a few weeks old. It was sent over in some late correspondence, we suppose, of those wonderful *enterprising* papers which always have the *first* news. We would suggest all such to copy their new inventions direct from the Scientific American if they want to be posted up in such matters. For a description of this artificial fire, we refer to the Scientific American of September 1851, page 3.

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NEW INVENTIONS.

Railroad Car Coupling.

James Turner, of East Nassau, Columbia Co., N. Y., has taken measures to secure a patent for improvements in railroad car couplings. The improvements are chiefly intended to cause the locomotive or any car of a train that may, by accidental means, get off the track, to detach itself immediately from the train, by which means it will often be preserved from material injury itself, and other cars will not be drawn off the track along with it. The improvement also allows a closer connection to be made between the cars, and dispenses with the buffer springs. The improvement consists, simply, in connecting the inner end of the traction bars, to which the buffers are attached to the car, in such a manner as to allow the buffer to move sideways, and in attaching to the ends of the car a transverse bar, whose upper side inclines upwards from the middle towards the sides of the car. Upon this bar the head of the coupling pin rests, the form of coupling employed being the common link and pin. When the engine or a car gets off the track, it drags the buffers of the next car sideways, and the coupling pins, being also moved sideways, are raised by their heads passing up the inclines on the transverse bar, until they are drawn from the links, and the detached engine or car is thus uncoupled.

Improvement in Sounding Boards.

Alfred Speers and Ernest Marx, of Aquackanock, N. J., have taken measures to secure a patent for an improvement in sounding-boards for pianofortes. The sounding-board is made in the form of a hollow cylinder, or prism, or part of either, the said board having its ends secured between two discs. The strings, cap, tuning block, and all parts of the instrument are suitably arranged around it to produce the sound. The principal object of making the board of this form is to improve the *sound*. The form also facilitates the making of a double instrument—one with two sets of strings in one case.

Incombustible Floors.

John B. Cornell, of this city, has taken measures to secure a patent for a useful improvement in iron floors, which is also suitable for roofs of buildings. The floor is constructed of two plates, or a series of plates of corrugated sheet-iron placed at a short distance apart, with the pieces of their corrugations opposite each other; in other words, ridge above ridge and furrow above furrow—the space between the said plates being filled with an incombustible cement or a concrete.

Submarine Exploring.

Willard Day, of the city of Brooklyn, N. Y., has taken measures to secure a patent for a useful improvement in sub-marine exploring vessels. The nature of the improvement consists in constructing a vessel having a chamber surrounding it into which both air and water are admitted, as required, in order to allow the vessel to float or sink. The sides of the vessel are pierced and contain lenses and lookouts; the lenses concentrate the light (which is artificial), within the vessel, and illumine the water and bed of the river, harbor, or sea, in which the vessel is working. The workmen look out from the vessel, and are enabled to examine objects outside of the vessel. Grapples, &c., are employed for warping and turning the vessel, and changing its location. The vessel is provided with tight hollow masts, through which a current of air is made to pass to the interior of the vessel, and to allow foul air to pass out. Steam is employed to propel the vessel by paddle-wheels, which have air chambers on their upper parts to prevent re-action when the vessel is sunk.

Diurnal Reflectors.

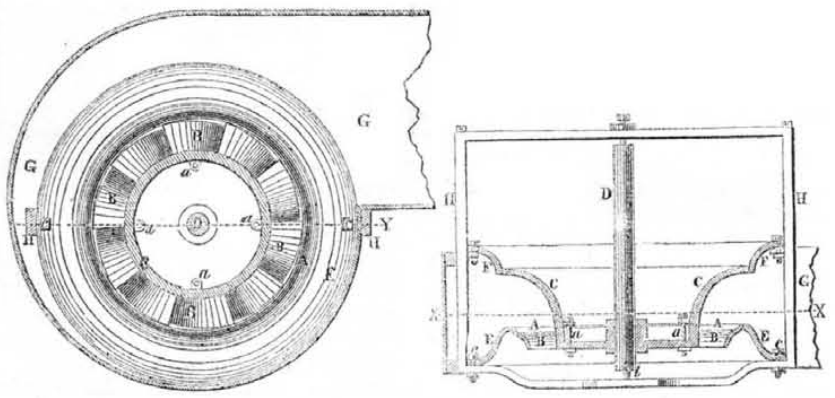
An optician of Paris, M. Troupeau, has recently introduced what he terms a "diurnal reflector," for the purpose of superseding artificial lights in the day time, by reflecting in any direction the natural ray of the sun from any skylight or window, however obscurely placed for any immediately useful purpose from bad construction of the building or otherwise, and pressing them into the service of any dingy corner which may require such assistance. They are made of sheet-copper, silver-plated and polished, and slightly corrugated in wavy ridges, radiating from the centre to the ends and sides, or to the circumference, if circular. This departure from a plane assists in the diffusion of light by multiple reflection, and without seeing one in action, it would hardly be conceived to what a desirable extent they may be made to illuminate a dark apartment, particularly rooms in basement stories, vaults, warehouses, &c.

Improvement in Trip Hammers.

Peter Stebbins and John Holmes, of Schenectady, N. Y., have taken measures to secure a patent for an improvement in trip hammers, so as to give the hammer a true vertical blow, also for regulating its force and velocity.

DODGE'S IMPROVEMENT IN RE-ACTION WATER WHEELS.

Figure 1. Figure 2.

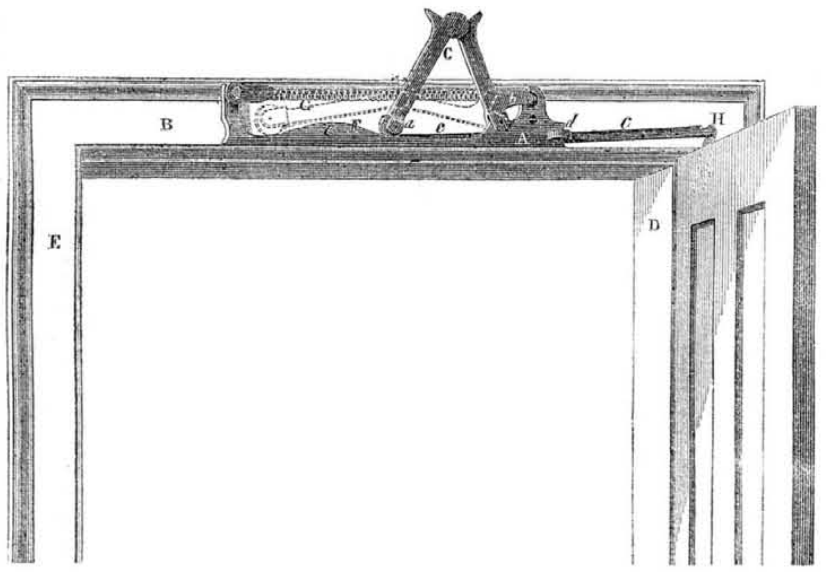


The accompanying engravings represent an alleged improvement in Water Wheels, invented by Mr. Edwin Dodge, millwright, of Dryden, N. Y., who has taken measures to secure a patent for the same. Figure 1 is a horizontal section taken at the line X X, fig. 2. Fig. 2 is a vertical section taken through the centre of the wheel at Y, fig. 1. The same letters refer to the same parts on both figures.

A represents the wheel; B are the issues, rather wider at the upper part than at the bottom, and are inclined, as fully shown in fig. 2. C is a bell-shaped cap or head, bolted to the wheel just within the issues, secured by the bolts, *a a*. The bell-shaped cap or head (best seen in fig. 2) gradually expands as it raises and projects at the top some distance over the issues of the wheel. D is the shaft of the wheel fitted on the point, *b*, at its lower end. E is the stationary rim which encompasses the wheel, and F is the rim which encompasses the upper part of the bell-shaped cap or head. It will be seen by referring to fig. 2 that the rims are of a curved form, and that they curve outwards in reverse directions, —the lower rim, E, curving downwards, and the upper rim, F, curving upwards. G is the scroll within which the wheel is placed, as well as the bell-shaped cap or head and the two rims, the top of the scroll being just under the edge of the upper rim (better seen in fig. 1.) Both rims are secured to the uprights, H H, by small bolts which pass through the edges of the rims and lips in the uprights. The bell-shaped cap or head is fitted so as to work perfectly even as it revolves within the lower part of the upper rim. The peculiar object claimed by the inventor of this wheel is, that the water, as it is admitted, not only presses on the issues, causing the wheel and bell-shaped cap to revolve, but it will also press upwards against the cap or head, and thus counteract not only the pressure of the water upon the issues, but also the gravity of the wheel, thus taking the weight off the point, *b*.

Information relative to the cost of this wheel may be obtained by addressing the inventor as above.

WESTCOTT'S SELF-REGULATING DOOR SPRING.



This is an improvement on Door Springs, by Dr. A. Westcott, of Syracuse, N. Y., and for which a patent was granted in October, 1850. The objects sought to be gained by the peculiar arrangement of this spring, are the four following, viz. :—

1st. To secure a sufficient amount of power at or near the closing point of the door, without too great a tension of the spring at that point.

2nd. To have this power gradually diminish as the door opens, till the spring finally ceases to act upon the door at any point of opening which may be selected.

3rd. To prevent the door from slamming, as is always the case by the direct action of a spring.

4th. To furnish a spring that may be placed on either side of the door, or mortised into the lintel so as to be entirely hid from view.

This door spring consists essentially of a frame or plate, to which the other parts are attached, a spiral or other spring, a jointed lever, and track upon which the movable end of this jointed lever moves, guided by a friction roller and a cord or strap connecting the spring with the door. The manner in which these several objects are respectively attained will appear from the accompanying engraving, in which A represents a frame, to which the other parts are attached; B is the lintel of the door; C is a rule-jointed lever, with one end attached to the frame by a pivot, upon which it moves; D is a door post, to which the hinges of the door are fastened; E is a lock post; F is the track; G is a spiral spring, and H is a standard on the door, to which the strap or cord is attached. *a* is a friction roller which guides and facilitates the movement of the movable end of the jointed lever; *b* is an arm from the lever, C, to which one end of the spring, G, is attached; *c* is a strap or cord, one end of which is attached to the movable end of the jointed lever, and the other to the door; *d* is a friction roller, over which the cord or strap plays, and *e* is the highest part of the track.

Now, in order to understand how the arrangement of these several parts effect the objects above enumerated, it must be borne in mind that the spring is the motive power, and that the combination of levers and inclined planes are simply to modify its action. In a door spring of full size, the cord or strap is attached to the door at a point about five inches from its hinged edge; and when the door is shut, this lever (the distance between the edge of the door and point at which the strap is attached) is acting with its greatest force. But it will be perceived that, as the door opens, this point of attachment swings back, and behind the fulcrum or hinge; and when the door is fully open, the spring is expending its force almost directly against the hinges—its effective force being thus nearly or quite destroyed. Again, the arm or lever, *b*, attached to the jointed lever, is in a like manner losing its power by falling behind its fulcrum, and thus becomes constantly shorter. The jointed lever, when the door is closed, is also in its most powerful position, and is rapidly losing its power as the movable end is drawn back, so as to flex the lever, which is done by opening the door. The shape of the inclined plane is such as also to favor the same end. It will be readily seen that while the power of the spring is steadily increasing, the power of these three levers (as modifyers) is much more rapidly diminishing, so that the effect of the spring upon the door is becoming less. This effect has only further to be modified by the shape of the inclined plane to neutralize the effective force of the spring at any point which may be desired. The door is prevented from slamming by the great pressure of the roller upon the carriage, or track, till it passes over the most prominent point of the inclined plane; nor is this pressure at any time so much relieved as to allow the door to acquire much acceleration of motion—there being little or no difference from whatever point the door may start.

The last object named, and which is a very desirable one in many cases, is accomplished by attaching the arms, &c., to a simple plate and mortising into the under side of the lintel, and letting the arms play horizontally instead of perpendicularly, as in the accompanying engraving, in which case nothing is seen but the smooth surface of the plate, and are even plane with the lintel, and this, by being painted the color of the casing, would not be detected.

Persons desiring to purchase rights will please address the inventor, at Syracuse, N. Y.

Securing Spindles in Locks.

Nathan Mathews, of Pittsburg, Pa., has taken measures to secure a patent for an improved method of securing spindles in locks. The spindle is attached in the lock by means of a circular key which fits in a corresponding recess in the inner side of the lock which adjoins the door. The key is formed of a circular plate, said plate having a slot in it, and the slot passes over the spindle, the inner sides or edges of the slot fitting in grooves on each side of the spindle. There are a series of grooves in the spindle at equal distances apart, so that the spindle may be lengthened or shortened to suit doors of various thicknesses; thus making the spindle an extending one in every sense of the term.

Great Telegraphic Invention.

Prof. J. Milton Sanders, of Cincinnati, writes to the editor of the Evansville Journal, that David Baldwin, of New York, who is at present in that city, has quite perfected a telegraph which he says will revolutionize the system entirely. By it news can be transmitted on one wire opposite ways at the same time, and as rapid as a person can talk.

Linnet's Nest in a Curious Place.

Some workmen who were recently sawing up a log of English elm, in a block-maker's yard, at Sunderland, found a green linnet's nest embedded in the very heart of the wood. The moss, hair, and other materials of which the nest was composed, were in a good state of preservation.

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Scientific American

NEW-YORK, MAY 5, 1852.

The New York Times and the Patent Laws.

In the New York Daily Times of the 26th ult. there is a long article on the Patent Laws, there is also one as long in the Times of the 29th ult., in answer to a correspondent. The Times asserts that patents have been and are an evil, and that it would be better to abolish the present system of Patent Laws. It does not propose the abolition of the present Patent Laws, however, without offering a substitute, like all great statesmen; and, alas, such a substitute! But we almost forgot, it offers two substitutes; let us consider them apart. Here is the first one :—

"If we are not prepared to abolish the patent system at once, there would be a slight, nay, more than a slight advantage in confining the business of the office to the granting of caveats. Let the inventor have no other bonus than what he may make in retaining his secret, and getting it fairly and fully in the market, a year before his competitors. If his improvement be valuable, and meet a mechanical want, the profit he may thus secure will, we fancy, equal the largest desert. And then, at least, the enormous taxation now levied upon the public will suffer a very considerable reduction. The working poor man will the sooner enter upon equal terms of competition with the speculating rich one. And there will be quite little, perhaps no litigation."

This extract, which we quote from the Times of the 26th, is one of the most sublimely ridiculous emanations that we ever saw in print. Until now, we could not have believed that there was a single American man, woman, or child, that could read, so profoundly ignorant of what a *caveat* is, and of our Patent Laws. But we live in strange *times*, Benthamite-doctrine *times*.

A caveat is simply the *description* of an invention not yet completed, which the inventor sends to the Patent Office with a *fee* of $20, requesting it to be filed in the confidential archives of the Patent Office, and it contains this statement, "prior to making application for a patent for the same."

If another person makes application for a patent for a like invention during the term of one year from the filing of the caveat, the Patent Office, before acting on the said application, sends word to the person who files the caveat, to prepare his model and specifications, and make his application for a patent within three months. This is *the Caveo—beware*—of the Patent Office; it is no protection whatever, and there is no such a thing as a *writ of Caveat* granted; it is no bonus, and never can be. Perhaps the Times means a new kind of Caveat; if so, we would like to know what kind of bonus he could make out of it. What in the name of common sense is evolved by the expression, "let the inventor have *no other bonus* than what he may make in retaining his secret, and getting it fairly and fully in the market a year before his competitors,—the profit he may thus secure will, *we fancy*, equal the largest desert."

There can be no doubt but there is a great quantity of *fancy* here. The Times surely means to have a new law enacted, by which an inventor will be compelled, whenever he makes an improvement, to describe the same to the Patent Office, which will grant a Caveat for one year—a beware to the public,—after which the Patent Office will reveal the same for the benefit of the public. This is the plain inference to be drawn from the language of the Times,—or it is nonsense. It is *nonsense*, for no law can be made that will compel an inventor to reveal his secret in one year; and no inventor would then be so contemptibly foolish as to reveal his secret at all in one year, or twenty years, while he can keep it to himself. The *caveat-bonus* of the Times, is therefore one of the modern Benthamite wonders of literature. The expression about the capitalist and working-man and enormous taxation, are quite unintelligible to us; we do not know what the Times means. But this is not the only remedy for the present patent system proposed by the Times; here is another, and it is a *perfection* one :—

"These half-way measures, however, are seldom satisfactory. All the evils were better reached and cut away at once; and to effect this, nothing will answer but the abrogation of the entire code. As a substitute for it, we know of nothing better than a system of bounties. Replace the present troop of officers and examiners, with a commission composed of a due number of practical mechanics, and mechanical philosophers, before whom the inventor may lay his claims. Let them be prepared with an accurate knowledge of what has already been achieved, and with what improvements are required in mechanics, science, or art; and in passing upon the invention, let them determine not merely, as now, its title to originality, but to real and universal utility. If it be of intrinsic value, let them recommend its purchase by Government for the people; and let the Treasury pay for it. If it be of secondary importance, or of no importance whatever, let them so decide it, and leave it to make what way it can among purchasers without the official sanction."

The cloven foot peeps out here, whether intentionally or not. Yes, here it is. The present patent system does not allow political Galpinizing and Gardenerizing; it allows no spoils to the party victors: they do not get their hands into the Treasury to rob the people, in giving Uncle Sam's money out to favorite miserable inventors. The "practical mechanics and philosophers" of the Commission would be men as ignorant of their business as the Times is of a Caveat. This system of government rewards would answer well for political leaders, but the people of these United States are too enlightened to adopt such views. Patents do not tax anybody; but those who, like the Times, are ignorant of our Patent Laws, and who allow themselves to be cheated when they could easily prevent it by making themselves acquainted with the said laws. Here is another extract :—

"The inventor of real merit will invent, just as the author of real genius will write, even though there be positive laws against them. There is a necessity in these things. Accident is the parent of a vast number of discoveries; deliberate invention of the few; and no pecuniary reward will stimulate the latter into activity. The necessities of mankind, not the laws, prompt the loftiest reaches of inventive talents. And to the true man, who evolves a discovery calculated to benefit his race, the sense of such a benefit conferred, and the gratitude of his fellows, are amply sufficient compensation."

There is very little truth in the whole of this extract. The inventor will not invent, nor will the literary genius write with positive laws against them; it were just as true to say "the prisoner will exercise his natural instincts of liberty even if his limbs were manacled to the stone floor of a dungeon." Some discoveries have been made by accident, but all our great and useful mechanical inventions have been the result of much study, toil, expense, and research. Necessity is not at all times "the mother of invention." What use had Whitney for a Cotton Gin for himself, Watt for a Steam Engine, or the painter Fulton for a Steamboat? Rewards excite—not the necessities of mankind—inventive genius. It is related, in the life of Watt, that whenever he took up any invention, after he saw it would not pay, he threw it aside at once,—and wise and right was he. The Times speaks of inventors as if they were a lot of knaves and fools. But look at the compensation which the Times asserts is sufficient for a true inventor, "the sense of a benefit conferred, and the gratitude of his fellows are amply sufficient compensation," for his discovery. How would the Editor of the Times like to be remunerated by this kind of *sufficient* compensation, for the ideas he evolves. The mouse would often stagger from his flour barrel, with the tear in its eye, we guess, if he, the Editor, depended on the *gratitude* of his fellows for sufficient compensation.

As a matter of justice and right, we hold to the doctrine that inventors should be paid for their inventions by the community. Inventions do not tax, but relieve, the people. If a person does not wish to pay for a patented improvement, why, he need not use it: the patentee cannot compel any one to use his invention; and those who use it and pay for it, do so because they consider the improvement relieves them of a tax,—it gives a good new improvement for a clumsy, inefficient machine. We have now cheap newspapers by inventions for making type, paper, and printing machines, while no improvement in composing has been made in two hundred years. Would those improvements have been made, and would we now have such cheap newspapers, if the improvers had depended for *compensation* on the gratitude of their fellows? We trow not. It may do very well to raise up an ideal *true man*, but human nature will be human nature, and the man who speaks of such compensation for useful discoveries, surely did not see the conclusion any person would draw from such a sentiment—"thou hast no gratitude."

Manilla Rope.

A correspondent inquires of us if we know of any compound or solution "that would prevent manilla rope becoming tender and weak by exposure to heat and smoke, especially to those engaged in the foundry business," and adds, "iron chain cannot be depended on." We are confident that *good* iron chain can be trusted. We have never tried any personal experiments with the ropes; it is our opinion, however, that if rope were steeped in alum, (say about 1 lb. of alum to 20 lbs. of rope), dissolved in as much water as would cover the rope, in a tub, and let it lie there a few hours, then take it out, wash it in cold water, and then dry it, that it would stand the heat and smoke a great deal better. The rope would have to be thus treated before it was put up on the crane. The alum is a good substance for imparting a partially tanned and non-combustible character to vegetable substances, such as rope. This mode of treating the rope may not be convenient, in that case weak alum water might be applied to the rope with a brush, and then let it dry on the crane. We know of no plaster composition (like tar) that would answer. But it must not be forgotten, that all rope will wear out by continual usage, hence a sharp eye must always be kept upon it—as sharp as that upon the *flat-tow* of a coal pit, where life is in continual danger.

The Streets of New York.

We have been in many cities at home, and in the Old World, but no one can at all come up to our great empire city for dirt and dust, it is the Magnus Apollo of all others. The great benefactor of our citizens is a heavy shower of rain; it appears to be the only generous and efficient scavenger we have got. In wet weather, our most noted street—Broadway, is generally six inches deep with mud, and when this dries up, and a good breeze comes sweeping along, it is quite as great a feat to travel up our grand promenading street as to journey across the Great Desert. American travellers are exceedingly foolish to journey to Egypt for a sight of the sandy plains. Only for the intervals of mud, the camel might be a more useful animal among us than the horse. We have repeatedly called attention to our dirty streets, but we suppose it will be all in vain to expect a reform, and yet the remedy could soon be applied. Whose fault is it? Not the city government's altogether. Let the merchants in Broadway do their duty; let them unite together and get rid of the evil in their street, which they can easily do, and this will do much for the credit of our city. It is our opinion they would save the amount in the better sale of their goods, if they themselves should pay to keep the street clean.

Russia Sheet-Iron.

MESSRS. EDITORS—From your remarks on "Russia Iron and Patents," in the Scientific American of the 24th April, I infer you have no knowledge of the manufacture of "Imitation Russia" sheet-iron in this country, I therefore take the liberty of informing you that I have (with my brothers) been supplying that great desideratum since 1842, in which year we obtained United States Letters Patent for the successful discovery of a process of giving to sheet-iron (in its manufacture) that beautiful finish and durable gloss and lustre, heretofore only known in Russia; last year we obtained another patent, from the U. S., for an improvement made in our *modus operandi*—and we now have in successful operation the "Delaware Iron Works," in Delaware; "Constitution Iron Works," near this city, and the "McKeesport Iron Works," near Pittsburg, Pa.—making an article equal to the Russian, of which we sold in New York alone, last year, 200 tons or more. Whether we have hit upon the secret mode of Russia or not, we do not pretend to know—nor do we believe that it is yet known out of Russia; there have been so many different candidates claiming that honor, with as many different modes that nothing less than the most substantial and conclusive proof of the discovery of the secret, should satisfy any one. And we not think Congress should pass a law granting the exclusive right to any one to manufacture this article by the Russian process, without such proof being furnished, and not then if such law should conflict with patents already granted. ALAN WOOD.

No. 3 North Fifth street, Phila.

[Mr. Wood is greatly mistaken if he supposes we ever discuss any question without being well acquainted with it. If he had been a *careful* reader of the Scientific American, he would have noticed that our subjects are carefully considered, and all our remarks well digested.

We perfectly agree with him, about Congress not granting the exclusive right to any one to make Russia Iron, without the requisite proof spoken of, and there is no fear that Congress will do so. We also assure him that the requisite proof has already been furnished. Before we penned the article referred to, we examined specimens of the iron made by the said process, also specimens of Wood's sheet-iron.

We also asusre Mr. Wood that we know the whole process by which it is made, and if it be not better than that of Wood & Bros., then he need not be afraid of his craft, for assuredly it will do him more good than harm; the process must stand or fall upon its own merits. Is Mr. Wood afraid of it?

If Congress should grant a patent to-morrow which would conflict with any one in existence, then the one granted by the special act would be an infringement of the other, and the users of it liable for damages. The specimens of the sheet-iron referred to, which we saw, were very excellent, and stood burning in the fire better than a specimen from McKeesport Works; Wood's sheet-iron is a beautiful article, and does credit to the gentlemen who discovered the improvements.

Another Explosion.

On the 25th ult., as the Prairie State was passing out from Pekin, on the Illinois River, the flues of her larboard boiler collapsed, and sad to relate, some twenty persons were killed and wounded. The ends of the boiler flew out, and but for a quantity of hay stored in the boat, the loss would have been much greater.

A bill is now before the United States Senate, (which we hope will pass), for the prevention of accidents by explosions. We have received a copy of this bill, and will have more to say about it next week. We have also received the pamphlet of A. Guthrie, engineer of the Chicago Water Works, on the causes of explosions on the Mississippi, their prevention, &c. We will present the substance matter of this able pamphlet to our readers at an early date.

Sad Death of a Good Mechanic and Inventor.

Junius S. Alcott, of Oriskany Falls, who has left behind him a name on his lathe, during a fit of temporary insanity, committed suicide on the 26th ult., by throwing himself between the water-wheel and pinion of the woolen factory in that place. He was killed instantly. His loss will be much felt. We knew him well, and deeply regret his sudden and unhappy departure from among us. His partner, Mr. Couch, was in this city when the unfortunate event occurred.

We have received the thirty-first Annual Report of the Mercantile Association and supplement to the catalogue. This institution is one of the best in our city, and we are happy to know that it is in a highly prosperous condition; it numbers about 4,000 members, and has a library of over 30,000 volumes.

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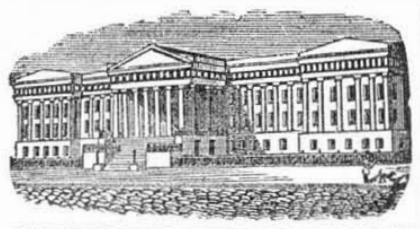

Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 27, 1852

VALVES FOR STEAM ENGINES—By M. W. Baldwin, of Philadelphia, Pa.: I claim the arrangement in the valve chest of a steam engine, of a duplex valve, one part of which is actuated in the usual manner by valve gear, to admit steam from the boiler, to act directly on the other part and force it to open and close the steam or exhaust passages, substantially as described.

FILE CUTTING MACHINERY—By John C. Blair, of Pittsburgh, Pa: I do not claim a pattern for regulating the depth of the cut of the chisels; but I claim the combination of the pattern located between the cam and the chisel carriage, in the manner described, with said cam and carriage and the file carriage by which the pattern is moved, the whole arranged and operating substantially as set forth.

SHUTTLES FOR WEAVING HAIR CLOTH, etc.—By D. L. Dewey, of Hartford, Ct.: I claim the combination of the sliding bar with the springs when used in connection with stops attached to the shuttle boxes, or other convenient fixtures, so that the motion of the shuttle will slide the bar in such a manner that when one of the springs drops one piece of the woof or filling, the other spring will receive and confine another at the other end, so that the pieces may be carried through alternately from each side, and released or dropped in the right position to be beat up, when the whole is constructed and arranged as described.

HOLD-BACKS FOR SLEDS—By Perry Dickson, of Blooming Valley, Pa.: I do not claim connecting the dogs with, and operating them by the backward pressure of the tongue; but I claim attaching the dogs to the roller rigidly, instead of to the runners, as is usual, and connecting the tongue to the said roller by hinges, or analogous joints, in such a manner that the backward motion of the tongue, in relation to the body of the sled, turns the roller on its axis and forces the points of the dogs so attached to it, into the snow or ice of the road, for the purpose set forth.

SMUT MACHINES—By John M. Earls, of Troy, N. Y.: I do not claim a perforated case, the same having been heretofore in use; neither do I claim a spike rubber; nor a ventilator with spiral arms; nor scourers made of sheet or other metal. Nor do I claim the oil box at the top of the machine; nor the oil pipe for the lower bearing of the shaft: but I claim, first, the projecting screen chambers, in combination with the arrangements for separating the rubbing chamber from the fan chamber, whereby the grain is prevented from being affected by the blast from the fan chamber, while it is passing through the rubbing chamber, and is only brought in contact with the current of air where it ascends to take away the chaff and other impurities, substantially as set forth

Second, I also claim, in combination with the scouring surfaces, the beating forks, for the purpose of beating the grain and breaking the hulls, while falling from the rubber to the scourers, whereby the berries are more effectually cleaned from adhering impurities, as set forth.

STEERING APPARATUS—By N. T. Edson, of New Orleans, La.: I do not claim any particular part of the apparatus as new; but I claim the combination of the forked and unforked pawls, with the single ratchet, and with rubbers placed face to face and on the same side of the wheel.

Second, I claim the combination of the spring, the arms, and the cap piece with the relieving springs, whereby the pawls are supported with sufficient firmness, but at the same time permitted to have sufficient play to admit of the action of the said relieving springs, all as substantially set forth.

RAILROAD SWITCHES—By J. F. Klein, of Trenton, N. J.: I claim the bars or shifters, constructed, arranged, and connected to the switches of a railroad, in the manner and for the purpose as described, so that if the train run in either direction, and the rudder be placed in either position, as described, and if the switch or switches are not in a proper position, the rudder will act upon the shifters and move them gradually, as the train approaches, so as to move and place the switches in such a position that the train may pass on unimpeded without the risk of running off the track.

GINS FOR LONG STAPLES OF COTTON—By Calvin Willey, Jr., of Chicago, Ill., (assignor to himself and Urial Walker, of Babcock's Grove, Ill.): I claim regulating the feed of a cotton gin for ginning sea island cotton, by means of an endless apron, which may be set to or from the feed rollers, to suit the quality of the staple and the quantity to be fed in to be cleaned, and still be driven by the same mechanical movement, as described.

I also claim, in combination with the covered feed rollers which receives the material from the apron, and carries it into the machine, the series of alternate brushes and elastic beaters on the same shaft, for combing out the fibre and knocking off the seed, whilst it is still held by said rollers, as set forth.

I also claim, in combination with the inclined chamber, through which the material is driven by the blast from the wings of the beaters, the inclined chamber having a cross blast through it, from the fan blower, to complete the entire separation of the fibre and the seed, both chambers being provided with screens, for the purpose set forth.

WARM AIR FURNACES—By Alex. Kelsey, of Rochester, N. Y. (assignor to James Cowles): I claim the use of an equalizing flange, with the tubes attached, by which the air on each side of the radiating cylinder is warmed to about the same temperature, before entering the warm air-condensing flues.

MACHINES FOR PRESSING TOBACCO—By Ephraim Parker, of Rock Island, Ill., (assignor to Alfred A. Parker, of St. Louis, Mo.): I claim the use of the revolving mould disc, combined with its revolving bed plate, with the scraper and roller, or their equivalents, for keeping the moulds free from the liquorice or juice of the tobacco, as described.

I also claim the use of revolving sinkers, constructed substantially as described, combined with the pan and cushion, or their equivalents, for keeping the same clean, and the combination therewith of mechanism for moving the sinkers a quarter of a revolution at every eight (more or less) number of pressings, as described.

I also claim the conductor, formed of endless aprons or belts, or their equivalents, for confining and retaining the plugs and pressure, until they are thoroughly consolidated, in the manner and for the purpose set forth.

STUD BRACE FOR BOILER FLUES.—By Andrew Lamb & Wm. A. Summers, of Hants Co., England; patented in England, Dec. 9, 1848: we claim the stud brace for bracing the flat surfaces of steam boilers, as described.

BRUSHES—By Freeman Murrow, of Williamsburgh, N. Y.: I claim the double adjustability of the brush by means of the combination of the ball and socket joint and the sliding joint, or their equivalents, as set forth.

FLOAT GAUGES FOR STEAM BOILERS, etc.—By T. J. Sloan, of New York City: I am aware that a float placed within a boiler, or within a vessel communicating with a boiler, has been employed to regulate the position of ratchet hands, operated by an independent mechanism, to open and close a valve cock, or regulate the motion of a pump, the said float being employed, simply to engage or disengage the said ratchet hands; but when so employed, the said float has been so arranged as to act on the said mechanism outside the boiler, etc, and hence subjected to the difficulties above pointed out.

I do not, therefore claim the employment of a float to regulate the action of an independent mechanism as a means of indicating the height of water, and regulating the supply thereof, when such float acts upon such mechanism outside of the boiler; but what I claim is the employment, substantially as described, of an independent float, within a steam or other boiler, or other vessel, which, as its position is varied by the change of level of the water, shall act as a check or stop to the motion of a mechanism combined therewith, and operated by an independent motive force, outside of and passing through to the inside of the boiler, substantially as described, to determine the supply of water to be given, or to give the required indication or alarm, as specified.

I also claim the method described of preventing the action of the mechanism outside, which is actuated by an independent force, from re-acting on and changing the position of the float, that it, the float, may be free to follow the varying level of the water, as specified.

SELF-LOADING AND DUMPING CARTS—By B. T. Stowell, of Waddam's Grove, Ill.: I claim the manner of opening and closing the slatted bottom of the cart body by means of a bar which is jointed to the rear edge of the foremost slat, and which, when its rear end is unfastened, descends vertically and allows the whole series of slats to be operated simultaneously by the action of the weight within the cart body pressing upon the same; and when the rear end of the said bar is drawn rearwards and upwards simultaneously actuates the whole series of slats, and thereby closes the bottom of the cart body.

STEERING APPARATUS—By A. Swingle & N. Hunt, of Boston, Mass.: We are aware that the steering gear and rudder head have been connected together and the tiller made to rise and fall with them, and therefore do not claim such an arrangement. But we claim the construction and arrangement of the tiller and rudder head, as described, in combination with steering gear entirely separate from the rudder head, the tiller being connected with the latter and attached to the former, in such manner that when the rudder is unshipped or raised unusually high by striking the bottom, the tiller will be disconnected therefrom, without danger of breaking either the steering gear or the rudder head, or being itself broken.

BOXES FOR JOURNALS—By Henry Turner, of Charlestown, N. H.; I claim making the cap box in the manner described, that is to say, of alternate pieces of hard and soft metal, arranged in a helical position, by which, together with the circular end pieces, the soft metal is kept in place, and friction and injury to the axle prevented, substantially as described.

CULTIVATORS—By T. J. Ball & J. Post, of Pittsfield, Mich.: We claim the construction of the long metallic inclined blades, on the after part of the machine for cutting the sods and lumps, and pulverizing the ground, as set forth.

DESIGNS.

COOKING STOVES—By S. H. Sailor (assignor to North, Harrison & Chase), of Philadelphia.

PORTABLE FURNACE—By James G. Abbott & A. Lawrence, of Philadelphia, Pa.

Patent Law Reform.

MESSRS. EDITORS—The remarks in your paper of the 17th inst., referring to the 8th and 12th sections of the proposed Bill for the amendment of the Patent Laws, direct attention to matter of considerable importance. Extending, or varying the subject of reform, as regards these laws, I would intrude upon your valuable space by offering a few observations on the present rules and provisions relating to the filing, &c., of Caveats. What a chapter of disappointments could the confidential archives of the Patent Office disclose, were the veil of secrecy withdrawn and all the embryo bantlings of inventive genius made bare! How many a novel but impracticable idea should we find! And yet, new or old, practicable or impossible, the requirements of the law are the same. An inventor has conceived, in general outline, what he believes to be a new and useful mechanical device; he obtains the protection of the law afforded him by caveat; proceeds, free from the dread of piracy, to experiment, and finds—alas, poor Yorick!—that practice fails to establish what theory had promised. This caveat, he has been told, was gratuitous protection. (What a utopian fallacy is law "for nothing.") The twenty dollars paid were simply two-thirds the application fee in advance; but the bubble having burst—the imaginary invention having proved itself a "gay deceiver," two courses of procedure alone are left, which are, either to sacrifice the twenty dollars paid; or, for the recovery of that, become cent-wise and dollar-foolish, by submitting to furnish the office with a model of a device that won't act and a specification of a "new and useful (?)" improvement descriptive of the same. Ten more dollars having been paid, a withdrawal of the twenty may then be made, and the scientific or mechanical idiot made a sentinel in the "tombs," to scare away more successful applicants or weaken the claims of perfected discoveries.

Messrs. Editors, I would respectfully inquire from you, is there no room for reform in the law relating to Caveats? G.

Washington. D. C, April 24.

[The reform for a Caveat, is to require good drawings for the invention, so far as it is completed, with a particular description and claims. The caveat, then, would be like a patent specification in contested cases—is all we can suggest at present—ED.

The Lakes and Salmon.

MESSRS EDITORS—I am somewhat surprised to see in your paper of the 24th inst., the article headed "Mystery of the American Lakes," from the "Welland (C. W.) Advocate;" you so seldom err on subjects of philosophy, that we might indulge an occasional hoax, if we could feel sure you did not believe in it yourselves; but to tell about a "subterranean passage between the upper lakes and the ocean," through which salmon and herring can pass, is starting a fish story that the famous captain of a whale ship, who held the sea serpent at the bottom of the ocean fifteen hours, would hardly endorse. Having spent forty years of my life along the shores of those upper lakes, and having never found a man old enough, or cunning enough to have caught a salmon (of the lower lake species) in any of the upper lakes, before the opening of the Welland Canal, I am willing to believe that through this canal their first entrance was effected,—but had they been plenty as cat-fish and sheep's heads, I should have been satisfied to consider their existence in those waters, as dating back to the time when the ridge that forms the Falls of Niagara was ocean's shore; or, that an Indian or a fish-hawk had accidentally deposited, above the Falls, booty from the lakes below, rather than suppose an under-ground tunnel some two or three hundred miles long, and sufficiently large to admit the passage of the unaccounted flow of water which the writer seems to think is not evaporated and "does not pass through Detroit river." As Lake Huron is at least 280 feet above Lake Ontario, no large body of water could pass from one to the other without occasioning a vast whirlpool at one end of the passage, and an immense boiling jet at the other; and any periodical passage of herring and salmon would be less likely to account for the flux and reflux of the lakes, than the increased amount of snows and rain that fall some years contrasted with others. Had the writer contrasted the steady and uninterrupted flow of the Detroit river, with the gushing and diminished flow of the fitful streams which feed the lakes, and then deducted for evaporation on the liberal scale of Nature's works, he would probably have found the under-ground passage between Lakes Huron and Ontario too small for an old salmon to swim up. J. E. HOLMES.

Holyoke, Mass., 1852.

[To friend Holmes, we must say, this is not a question of philosophy, but one of fact, like the statement of a witness. We made no remarks upon the probability or improbability of a subterranean communication between the lakes, apart from the statement "are herring and salmon found in lakes and rivers above the Falls?" We are now informed that salmon pass up through the Welland Canal, and the herring must also pass through the same source it found above the Falls. Subterranean rivers are not wonders; but if salmon were found in the upper lakes, and they having no communication with the ocean, this would be a wonder—such an one as our faith would be too weak to embrace, for the salmon only comes to fresh water to spawn.

Editors.

The life of an editor is comparatively short. He wears out before his time. The exacting toil he pursues, which is rarely, or never broken by a solitary day of relaxation, shatters his nerves, exhausts his vital energies, and makes him gray-haired almost in middle age. To him the course of nature is reversed, and night is turned into day. He labors when other men sleep. Nothing tells sooner on the constitution than this. The close room in which he usually sits, the stifling odors of damp newspapers from the mail, and the blinding glare of the gas-lights increase the wear and tear upon his system, so that he is a fortunate member of his profession if he does not give out entirely before he is fifty years old. Nothing but distinguished success and the consequent ability to lighten his toil by employing substitutes, can save him from this irresistable doom.

[The above, taken from the Boston Museum, is a true picture of an editors life. Who covets it?

Remington's Bridge.

Some few years ago the Remington Bridge was spoken of all over the country as a mechanical wonder, and the model excited much attention in London. One was built at Montgomery, Alabama, of which the State Register gives the following account:—

"Remington's Bridge, after standing for months in a very tottering condition, has now broken in two about the middle, and fallen into the ravine. Soon after its completion it was tilted to one side by the wind and its own weight, and never righted—the slope being too great to allow the passage of vehicles. It stood unused, a monument of humbuggery, for more than a year; and we presume that its destruction will convince even the most decided believers in Remington's theory, that his plan will not answer for long and heavy structures, which, as in the case of the bridge here, will break with their own weight, after losing their original balance, by the action of the weather. The bridge, we believe, was never accepted by the Council, and the city, therefore, loses nothing by its unfitness and demolition. It was built under the supervision of Remington himself, and must have been a costly work."

Iron Flags.

There is no end to the new purposes for which iron is beginning to be used. At Cincinnati, they are taking up the broad flag stones, which are laid down for foot passengers at the crossings of the streets and substituting iron plates. The Cincinnati Commercial says:—

"The broad iron plates, which are laid from the sidewalk over the intersections of many of our streets, is one of the best investments the city ever made. If physicians and others, who have much driving to do about town, do not appreciate the comfort of these plates, the springs of their wagons and carriages do.

[If these plates are not very rough on the surface, they will soon wear slippery; in that case, pedestrains must look well to their feet in wet and sloppy weather, or down they will go. Foot passengers wear out cast-iron plates faster than carriages and horses.

A New Clock for the City Hall.

We notice, by the late proceedings of the Common Council that arrangements have been made with Messrs. Sherry & Byram, of Sag Harbor, L. I., to place one of their highest grade clocks in the cupola of the City Hall. Our city has always needed a general "Regulator," and from the high reputation of those gentlemen, our citizens may soon expect to possess the great desideratum—a universal standard of time, as a guide for one railroads, steamboats, &c., as well as for all branches of business is what we all devoutly wish for.

By private letters from Nineveh, we learn that Colonel Rawlinson, who is now conducting the excavations abandoned by Mr. Layard, "has opened out the entire place of sculpture of the Kings and Queens of Assyria." "There they lie," we are told, "in huge stone sarcophagi, with ponderous lids, just as they were deposited more than 3,000 years ago."

A physician of Prague has just died a real "martyr of science." He had been in the habit of taking strong doses of poison, after swallowing an antidote, in order to note the effects. On the 23d ult., he took so large a quantity of morphine that all the efforts of some medical friends present at the exhibition could not save him.

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TO CORRESPONDENTS.

A. B., of O.—We shall forward the specification for you to execute, early next week.

A. G. S. S., of ——.—We regard your apparatus as new and patentable, and we can see no objection to its operation; you had better send us a model, and inform us in what State you reside, that we may address you by letter. The model should not be over 12 or 15 inches square, and very substantially made.

J. B., of N. Y.—We have long been familiar with suc a Corn Sheller as you mention; it could not be patented.

J. P., of N. H.—We have carefully examined the model of your alleged improvement in Rotary Steam Engines, and regret to state that it does not possess any novel features, such as would warrant you in making an application of it: you will find substantially the same plan among the oldestinventions of the kind. Examine Hebert and Galloway on the Steam Engine if you have a copy convenient.

T. D., of Ala.—We have never heard of your plan for preventing incrustations proposed, nor have ever seen it in use; it is new to us, and we like it; the only objection against it, is the power required to work it, and the increase of expense; the question to be asked and answered is, will it pay the expense? We could not say yea or nay. Could you not try the question of economy by experiments? We can vouch for its originality.

S. L., of N. Y.—The sale of oatmeal is limited, and we believe the business would not be profitable; stsll, we cannot tell so well about mercantile affairs; the process of making corn starch is not patented that we know of; it is kept somewhat a secret, and is a profitable business. To make the oatmeal, you would have to erect a kiln, and the common oats will not answer; if you could get a good sale for the meal the business would pay well, we believe.

J. F. R., of Pa.—Yours containing the description of Mr. S.'s invention, came duly to hand, and will soon be attended to.

Dr. B. H. W., of Ky.—Yours of the 20th ult. came duly to hand, covering $4, in full for freight on model.

C. R. T., of N. Y.—Will please send us a sketch and description of his improved Car Box, that we may more fully understand the nature of the invention. The patent you refer to has not prevented the issue of several patents, and if you have a new way of accomplishing the same result, you are justly entitled to a patent for it.

H. G., of Mo.—There is nothing new in either of your inventions. The same ideas have been suggested to us before.

S. C. K., of Wis.—We have examined the drawings and description of your alleged improvement in the Theodolite and Circumferenter, it appears to be substantially similar to the one described in No. 32 Vol. 4, Sci. Am., by W. M. Wilson; we believe his worked well.

J. H, of Ala.—We see nothing patentable in your wind-mill; the same plan, substantially, is employed for mining purposes in Cornwall, Eng., plans of which we have examined.

A. C., of N. Y.—We have repeatedly stated that Prof. Morse is justly entitled to his invention in the Electric Telegraph, and that he can sustain it. The invention is one of great beauty, and confers great credit on his genius. We also believe his invention to be different from Bain's, and that the latter's claims were justly sustained by Judge Cranch, in his decision in March, 1849.

L. T., of Ohio.—It will be the province of a jury to decide on the evidence given by experts, and you must abide the rendering of the jury or appeal to the full bench of the Supreme Court at Washington; of the merits of the case we cannot, neither would we wish to examine into it, as we have no time to attend to it We hope justice will be done.

Money received on account of Patent Office business or the week ending May 1:

D. D, of Pa., $30; G. N., of N. Y., $30; Z. H, of O., $100; J. A. J., of N. Y., $10; C. F. B, of R. I., $30; Miss L. A. S., of Pa., $50; A. P., of Mass., $30; E. H., Jr., of N. Y., $30; S. M. B., of Vt., $32; J. T., of N. Y., $20; G. S., of N. Y., $25; J. O., of N. Y., $15; W. D., of L. I., $35.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending May 1:

J, C., of N. Y.; C. F. B., of R. I.; Z. H., of N. Y.; B. T. N, of Mass.; R. S. R., of Ky.; J. T., of N. Y.; J. S. M., of Vt.; G. S., of N. Y.; N. M., of Pa.; W. D., of L. I.

Inventors and their Models.

There are several small cases remaining at the various Express offices in this city, marked to our address, on which the expenses have not been prepaid. We would respectfully inform inventors that the Express charges on ten or a dozen cases daily, from every part of the Union, amounts to no inconsiderable expense, and that we shall, in future refuse to receive packages unless the Express fees have been paid, or the expense otherwise provided for. Parties who reside at a remote distance from the city, and cannot arrange for pre-paying the Express charges, should enclose a sufficient amount in a letter and send by mail.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1.

Of Volume 6, all; price in sheets, $2; bound, $2,75

Of Vol. 7, all back numbers at subscription price.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

City Subscribers.

Those of our subscribers who receive their papers from Carriers, and change their location on the 1st of May, will please leave their new address at the office.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying

Patent Laws, and Guide to Inventors.

We publish, and have for sale, the Patent Laws of the United States. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. Price 12 1-2 cts. per copy.

ADVERTISEMENTS.

Terms of Advertising.

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Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

REGULATORS FOR STEAM ENGINES—The subscribers having purchased of L. B. Pitcher the exclusive right to make, vend, and use his PATENT HYDRAULIC REGULATOR, are now prepared to attach the same to any Steam Engine or Water Wheel now in use, and warrant them to give a regular and steady motion to the Engine or Wheel; and in any case where they do not work as recommended, will replace the old Regulator at their own expense. Engines making fifty revolutions per minute, can be held, regardless of the kind of work to be performed, so as not to vary more than one half revolution per minute; the more sudden the change of work or steam, the quicker the Regulator moves the valve—a loss or gain of half a revolution will open or close the steam valve from one extreme to the other. THURSTON, GREENE & CO.,
34 3* Providence, R. I.

TO BUILDERS AND WORKERS IN Wood—We are selling a very simple durable, and effective Mortising Machine for $20, boxed ready for shipment. We have sold a large number within the last year, and they have given satisfaction. We furnish three chisels and a lever to operate them. Address MUNN & CO.

A **PROFITABLE INVESTMENT**—One half the interest in the Machine Shop of E. W. Hudnutt & Co., at Geneseo, is now for sale upon advantageous terms. The shop is doing a prosperous business, employing 15 to 25 hands. The work—building steam engines and boilers, mill gearing, castings generally, grain drills, wheel cultivators, plows, and various agriculturalimplement. The shop is worked by steam, and has an extensive assortment of patterns, flasks, boiler tools, etc. Also a planing machine, lathes, vises, etc., all in good condition. The shop is situatedin the shire town of Livingston, in the Genesee Valley, and for health, beauty of location, fertility of soil, advantages of society and schools, it is not surpassed in the U. S. A rare chance for a mechanic with a small capital. Possession given this spring or next fall. Address E. W. HUDNUTT & CO., Geneseo. N. Y. 34 2*

BAROMETERS AND THERMOMETERS—The undersigned manufactures all kinds of the bove in box-wood, ivory, and metal; improved day and night thermometers for registering extreme heat and cold; wet and dry bulb thermometers; improved marine barometers; thermometers for sugar, bakers, brewers, etc; hydrometers and levels—wholesale and retail. Repairing at the lowest prices. W. NORTON, 40 Fulton st, Brooklyn, N. Y. 34 2*

PEPPER'S IMPROVED KNITTING MACHINES—The subscriber is prepared to furnish, at short notice, power stocking looms of every size and gauge for making ladies' hose, men's half hose, shirts, and drawers, stocking net (for lining all kinds of rubber goods), or any other kinds of goods made on stocking looms; samples of goods sent to order, and looms warranted to make goods equal to sample. For further information address JOHN PEPPER, Portsmouth, N. H. 34 4*

U. S. GAS CO.—Incorporated Feb., 1852, under the laws of this State, now offer to dispose of their patent to manufacture their Portable Illuminator, to responsible parties for States, counties, or towns throughout the Union. Testimonials from scientific gentlemen, setting forth its advantages, can be seen at the office, 70 Beaver st, where we invite the public to inspect an apparatus which will inspire confidence with all, and convince any one that we can afford a most brilliant light for a small outlay. Residents outside the gas limits can have a gas apparatus for ten or one hundred lights furnished complete at an early day, by applying at the office between 10 A. M. and 5 P. M., where the terms can be known. W. C DUSENBERY, Prest; G. W. Pine, Secretary; Simeon Draper, Treasurer. 1*

DAGUERREOTYPE CAMERAS—A new article, of very superior quality, warranted fully equal to any ever produced in this or any other country; Daguerreotypists visiting this city will find it to their advantage to call at the establishment, 102 William st. L. CHAPMAN, importer and dealer in all kinds of Daguerreotype goods. 33 2*

IRON FOUNDERS MATERIALS—viz.: good American Pig Iron—grey, mottled and white; No. 1 Scotch Pig Iron, of favorite brands. Pulverized Sea Coal, Anthracitc Charcoal, Soapstone, and Black Lead Facings. English and Scotch patent Fire Bricks—plain, arch, and circular, for cupolas. Fire Sand and Fire Clay. Iron and brass moulding sand; Core sand and flour; always on hand and for sale by G. O ROBERTSON, 135 Water street (corner of Pine), N. Y. 33 6*

STEAM ENGINE FOR SALE.—One of Hoe's upright square Engines for sale, of about five horse-power, price $150: can be seen running daily. Apply at 47 Dey street, N. Y., in the rear, to C. H. ANDRUS. 33 2*

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

JOHN W. GRIFFITHS—Ship Builder and Marine Architect, 658 Fourth st., N. Y., furnishes models and draughts of all description of vessels, with the computation of stability, capacity, displacement, and necessary amount of impulsion. Propelling power located and proportionably adapted to the form of the vessel. whether sailing or steaming. Mr. G. also superintends the construction of vessels, and may be consulted upon all subjects pertaining to the various departments of the science or practice of ship building. Draughts forwarded by letter to all parts of the world, and to any desired scale; all letters must be post-paid. 27 13*

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD.

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

CLOCKS FOR CHURCHES, PUBLIC BUILDINGS, RAILROAD STATIONS, &c., and REGULATORS FOR JEWELLERS.—The undersigned having succeeded in counteracting entirely the influence of the changes of the temperature upon the pendulum, and introduced other important improvements in the construction of clocks, are prepared to furnish an article, superior to any made in the United States, (the highest grade warranted to vary less than two minutes in twelve months). Glass dials for illumination furnished. Address SHERRY & BYRAM, Oakland Works, Sag Harbor, Long Island, N. Y.

"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American.

"Mr. Byram is a rare mechanical genius." [Jour. of Commerce. 26tf.

A CARD—The undersigned beg leave to draw the attention of architects, engineers, machinists, opticians, watchmakers, jewellers, and manufacturers of all kinds of instruments, to our new and extensive assortment of fine English (Stubbs) and Swiss Files and Tools; also our imported and own manufactured Mathematical Drawing Instruments of Swiss and English styles—which we offer at very reasonable prices. Orders for any kind of instruments will be promptly executed by SIBENMANN & QUARTIER, Importers of Watchmakers' and Jewellers' Files and Tools and manufacturers of Mathematical Instruents, 15 John st. 23 13*

TRACY & FALES, RAILROAD CAR MANUFACTORY—Grove Works, Hartford, Conn. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly. 26tf

POST'S PATENT SLIDING DOOR FRONTS—for stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman and Son, 114 John st, N. Y., are general agents. Address, (post-paid) Wm. POST, Architect, Flushing, L. I. 25tf

NEW HAVEN MANUFACTURING COMPANY, Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinist's Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts, to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Co are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H Man'g Co. 25tf

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
23tf Painters and Chemists.

BEARDSLEE'S PATENT PLANING MACHINE, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 23tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 26 tf

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, Bridgeport, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 22tf

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped WM. B. PARSONS, and warranted. Samples furnished at the office, No. 284 Pearl street, New York. WM. B. PARSONS,
14 6m*

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

CHARLES F. MANN, FULTON IRON WORKS, Below the Troy and Greenbush Railroad Depot, Troy, N. Y.—The subscriber builds Steam Engines and Boilers of various patterns and sizes, from three horse power upward; also, his Portable Steam Engine and Boiler combined, occupying little space, economical in fuel, safe, and easily managed; Double Action Lift and Force Pumps; Fixtures and Apparatus for Steam or Water; Tools for Machine Shops; Shafting and Pulleys for Factories. Brass Castings and Machinery made to order at short notice. Steam engines furnished cheaper than can be had elsewhere, of the same quality. 30tf

N. G. NORCROSS'S ROTARY PLANING MACHINE UNEQUALLED—This machine took the first medals awarded to Rotary Planers at the Fair Boston and at the American Institute, in the Fa[illegible] 1850. The Circuit Court. in the Eastern Circuit held at Boston on the 24th Feb., before his honor Judge Sprague, decided, after a long and tedious litigation of two years, that the Norcross Machine does not infringe the Woodworth Patent; this was on a motion for a permanent injunction, which was refused without ordering a jury trial. Rights to use this patent are for sale by N. G. NORCROSS, Lowell, Mass. 29 8*

IMPORTANT TO IRON FOUNDRIES—The Galvanic Alloy Manufacturing Co., Nos. 401, 403, and 405 Cherry st., N. Y., will furnish the Aerostatic Fan Blower at $55, and with patent fitting at $65, that produce sufficient blast for the longest cupola, melting 3 and 4 tons of iron per hour; taking less than one half the power of those now in use, that cost from $80 to $100. The wings, being only about an inch in width (planned upon entirely new and mathematical principles), produce double the blast with half the power of other blowers. Warranted in all cases, or they may be returned and the money refunded. 29tf.

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

BALLOONS—From 1 to 1000 lbs. ascending power, made to order and warranted perfect. Also for sale, Wise's History and Practice of Aeronautics. No library is complete without this work: "It is the best book ever published on this subject,"—Scientific Am. Octavo, over 300 pages; 13 plates; price $2, delivered postage free to any part of the U. S. All letters (post-paid) addressed Lancaster, Pa., promptly attended to. JOHN WISE, Aeronaut. 32 5*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11 1y

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis.
15 20*

1852 TO 1856.—WOODWORTH'S PAtent Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 26tf

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SCIENTIFIC MUSEUM.

(For the Scientific American.)

Agricultural Science.

CABBAGES.—The cabbage has lately been chemically examined, in consequence of the failure of the potatoe, with a view to its substitution for that root. It is found to be richer in muscle-forming matter than any crop we grow. It contains more fibrin or gluten, of which substance the muscles are made, and hence is richer in the material essential to the health, growth and strength of an animal; wheat contains about 12 per cent. of it, beans 25 per cent., but dried cabbage contains from 30 to 40 per cent. of this all important material, of which the principal mass of the animal structure is built.

An acre of good land will produce 40 tons of cabbage; one acre of 20 tons of drum-head cabbage will yield 1,500 lbs. of gluten; one acre of Swedish turnips will produce about 30 tons, which will yield 400 lbs. of gluten; one acre of 25 bushels of wheat will yield 200 lbs. of gluten; one acre of 12 tons of potatoes, will yield 550 lbs. of gluten. Such is the variation in our general crops, as to the amount of this gluten, this special kind of nourishment, this muscle-sustaining principle, which accounts for the preference given by experienced farmers to the cabbage as food for stock and milk cows.

The cabbage flourishes best in a moist rich soil, such as reclaimed swamps; it is more hardy than the turnip in its incipient growth; and at a stage when the whole fields of turnips are liable to be swept off by the fly, cabbage plants enough to set an acre can be effectively protected under a few panes of glass, or a yard or two of gauze in a frame in the garden.

It is best for those farmers who plant cabbages, to raise the plants from the seed carefully in their gardens, in beds like onions, and then transplant the sprouts, when about six inches high, to the field.

In the early stage of growth the cabbage requires careful cultivation, most of which, however, may be done with the plow and horse hoe; as soon as the leaves expand and shade the ground, weeds are effectively prevented from growing enough to injure the crop or propagate their own seed. This leaves the field in as fine condition for the next crop as could be desired.

Cabbage roots should have plenty of room to shoot away down. The ground for them should be deeply spaded in a garden, and deep plowed in a field.

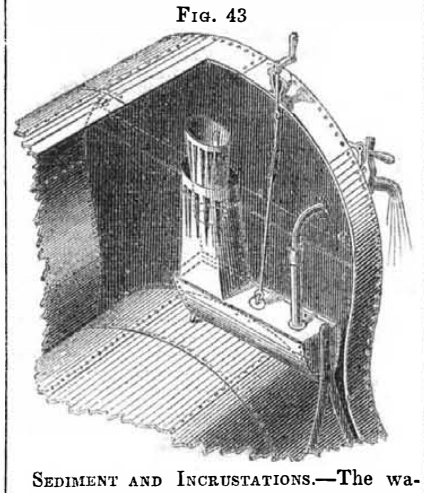
Any rich compost or well rotted manure is good for cabbage; coarse or unfermented manure is not good. Ashes, plaster of Paris, bone dust, poudrette, and a little salt will be found beneficial, but above all, if our farmers could save the urine of the stable and apply that mixed with two-thirds of rain water during a shower, just on top of the ground, they would find the cabbages grow to a very large size, and with fine firm heads. This plan of manuring has been long practiced by the Dutch, English and Scotch gardeners.

Solid Gas.

Dr. Lyon Playfair, in a recent lecture at the Royal Institution, London, on "Certain application of Chemistry to the Industrial Arts," referred to Mr. Young's process for obtaining paraffine from coal by slow distillation. Some years ago Liebig stated that one of the greatest discoveries of chemistry would consist in converting coal gas into a solid form, thus enabling it to be burned like a candle. This had, in a manner, been accomplished by Mr. Young. About three years since, Dr. Playfair drew the attention of Mr. Young to a spring of mineral oil containing paraffine, and occurring in a coal mine in Derbyshire. The liquid had been extensively applied by Mr. Young as a lubricating agent, a use to which Reichenbach had long ago suggested it might be turned. After a period, however, this spring ceased to flow, when Mr. Young applied himself to the investigation of the theoretical conditions under whcih it might be artificially formed. This gentleman saw that it would be difficult to convert gas into an allotropic form, whereas it was evident that gas must first come from a solid; hence he hoped to succeed in hitting upon the intermediate state. He stated the illuminating portion of coal gas to consist chiefly of olefiant gas (?), and the latter was isomeric with solid paraffine; but the allotropism does not end here—the peculiar slow distillation of coals yielding solid paraffine, also yielded other isomeric or allotropic compounds in the form of a lubricating oil, burning oil, and naphtha. Dr. Playfair explained, by the aid of a diaphragm, the slow distillation process of Mr. Young, employed in generating his allotropic form of olefiant gas, and directed the attention of his audience to some candles made of coal paraffine on the table.

On Boilers.---No. 22.

FIG. 43



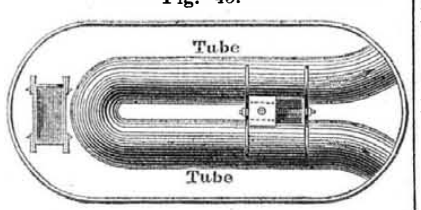
SEDIMENT AND INCRUSTATIONS.—The waters of all springs, rivers, lakes, and seas contain various matters in solution or suspension. These matters can be removed by filtering, if they are only suspended in the water, but if held in solution they cannot thus be removed. There are more matters, however, in suspension than in solution; hence, when such water is employed in steam boilers, the dirt or sedimentary matter soon collects on the bottom of the boiler, and adheres to the iron, if lime or magnesia, in any of its forms, be contained in the said matter. There is scarcely a place in the world where water is to be found that, if employed in steam boilers, but is sure to leave incrustations. If such water were well purified before its introduction into the boiler, it would not be liable to leave incrustations; hence, for stationary engines, it would

FIG. 44.

be well to use nothing but filtered or rain water. It appears to us that all our railroads can easily feed their locomotive boilers with rain water at all the stations. This can be done by having large collecting tanks near the feeding stations.

The accompanying figures (43, 44, 45) represent an apparatus for collecting the sediment in steam boilers, which was invented by Anthony Scott, of Durham, Eng., in 1827; its object is the collection of the sediment inside of the boiler. The principle of it is the placing of a series of trays or shelves in the boiler, answering the purpose of a false bottom. The object of these vessels is to operate like the still places along a river bank, which shelter and receive the sand brought down by the

FIG. 45.



current. In a boiler the water is always agitated, but it is prevented from boiling in the inside of this sediment vessel, consequently the more violent the water boils in the boiler, the more rapidly is the sediment collected. For calcarious incrustations, this sediment collector will not prove of any essential service, but then there are many places where it will answer well; the vessels themselves must be cleaned out frequently. In fig. 43 the upper conical vessel is made with narrow collecting apertures, adjusted partly above and partly below the surface of the water. In this way it is used by opening the valve at the end of the boiler, and putting the handle of the agitator in motion for half a minute, by which the contents of the sediment receiver, at the bottom of the boiler, are discharged through the pipe as represented. This is an easy way of cleansing out the "collector," and the operation can be performed very often. The sediment collecter is merely a series of trays, placed one above another, with apertures through their sides.

In figs. 44 and 45, the apparatus is applied to a double flue boiler 30 feet long, fig. 45 being a boiler of an egg-end shape; and one sediment collector, in such long boilers, should be placed on the middle of the flues, and another at the end of the boiler farthest from the fire. The lower collector (as shown in fig. 44) is merely a shallow tray standing on four legs; this was the form originally recommended by Scott, but the form in fig. 43, with the plan of cleansing out the sediment, is an improvement on Scott's principle, invented by Robert Armstrong, the author of the work on boilers. In a large boiler, he recommends half-a-dozen of these sediment collectors to be placed.

The waters of seas and rivers contain lime in solution, which forms in a hard crust in the inside of steam boilers, and is oftentimes the cause of explosions. In every case an incrustation on a steam boiler is a serious loss, for it is a non-conductor, and a great quantity of the fuel used is thereby rendered non-effective. We have known a boiler that was fed with water from a well on a limestone formation, which became incrusted with a scale of carbonate of lime one half inch thick every month. The engine had to be stopped one day every four weeks, and the scale cut off with a chisel-pick, made for the purpose. Every steamship that crosses the Atlantic, if her boilers are clean when she starts, has a scale of lime on them when her voyage is completed.

To remove incrustations, the boiler is emptied, and heat is applied in the furnace; the iron being a good conductor, expands quickly, and this somewhat loosens the scale, which, by the blows of a hammer on the outside, is broken off, and then it is swept out from the inside. Another plan is to fill the boiler partially with fresh water, and mix some sulphuric or muriatic acid to act chemically on the scale. This plan, however effective, is not a good one, as the acid acts on the iron as well as on the scale.

The grand remedy is a preventive. Many compositions for this purpose have been patented. A quantity of sal ammoniac put into the boiler, frequently has been very effective in preventing incrustations in the boilers of sea steamers. A composition of sal ammoniac and tannin was patented in England a few years ago for the same purpose. Mahogany saw-dust was patented in our own country, a few years ago, for the same purpose. Indian meal, potatoes, and flour have been used with very good effect. It is believed that resinous, oily, and starchy matters envelope the particles which form the scale, as they are set free, and prevent them from adhering to the iron; they are then easily blown out by the blow-off cock. Lead balls rolling on the bottom of the boiler have been used; and using the water into which the high pressure exhaust passed—which always contains oil or grease—has prevented scale forming. A composition of grease and black lead has been used with very good success; tar has also been used, and we believe it is a most excellent preventive; the way to employ it is to mix the coal tar of gas works in the proportions of 1 gallon to 1 pint of turpentine, and apply it to the boiler with a large brush, when it is empty. The fire is then kindled and the boiler gently heated. The boiler should be thus treated every three weeks; care must be exercised not to over-heat the plates while heating the tar to make it run evenly. Many other compositions have been used; in every case, where it can be had, rain water should be employed, that is if lime is held in solution in the common water around the location where the boiler is used. In many places, we believe, a great disregard to the collection of rain water in tanks involves an expense by the use of limous water, which could easily be prevented. Although we here present Scott's sediment collector, we believe that it is far cheaper to filter the water before it goes into the boiler. In New York city, the Croton water deposits a great deal of sediment, but otherwise it is very excellent for boiler use. The sediment can almost be kept free from doing injury by blowing off frequently.

Lubricating Oil.

Boil 500 lbs. of American potash in 125 gallons of water in an iron vessel, by means of steam, or in any other convenient way, until the potash is dissolved. After which add a sufficient quantity of water to supply the loss caused by evaporation. Let stand for 12 hours, and then draw off the clear solution for use. Next place in a suitable iron vessel, 4 tons of southern oil, and one ton of cocoanut oil, and to it gradually add, with constant agitation, the potash solution made as above stated; continue the agitation for two hours after the addition of the potash, then let the whole stand for twenty-four hours, at the end of which time draw off the oil, from the dregs, and heat it by means of free steam in a wooden vessel with half its weight of water; after standing 12 hours draw off the the water, and repeat the operation a second or even a third time, if necessary. Should the southern oil employed contain a large quantity of gummy matter, a large proportion of cocoanut oil or lard oil should be used.

LITERARY NOTICES.

THE YEAR BOOK OF FACTS—This work, for 1852, by John Timbs, re-printed by A. Hart, of Philadelphia, has been published in London for a long time; it contains, in a condensed form, a description of many inventions in the mechanical arts, chemical discoveries, and also discoveries in every branch of science. We hope this work has a good sale; it is a useful and instructive book, and is in England what the Annual of Scientific Discovery is with us

AMERICAN WHIG REVIEW, for May, contains a portrait of Hon. W. L. Sharkey, of Mississippi, with a biography; an able article on the American Iron Interests,—and various literary articles of considerable merit. It is a well-conducted publication.—Terms, $3 per annum; Champin Bissell, publisher, 120 Nassau st, N. Y.

ECLECTIC JOURNAL OF MEDICINE, Rochester, N. Y., conducted by Drs. Reuben and Dolley, is an able monthly. Terms, $1 per annum.

AMERICAN RAILWAY GUIDE, for May, is now ready, by Curran Dinsmore, 22 Spruce st., and for sale by booksellers generally. It is, we believe, the only guide published in the country upon which any reliance can be placed as a general reference.

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Mechanics and Manufacturers

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